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DECEMBER 1951

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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

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Duct between pulverizer
and bag collector carries
product in air stream main-
tained by fan on discharge
of collector. Method is
simple, dust-tight. Page 10

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Creators of PUTMAN-STYLE Magazines
... terse, vital editorial; "hand-picked" cir-
culation; square, high-visibility format; quality
readership; hence more READER ACTION



FOR SPORTSMEN ONLY...

How many of these animal tracks can you identify?



See next column for answers

Just as these footprints represent a few of the characteristic animal tracks you might find on your next hunting trip, the above fine chemicals are typical of the many groups produced by B&A for exacting industrial applications.

Over 1,000 reagents and fine chemicals are listed in the new 264-page 1951-52 Baker & Adamson Catalog. It is free to qualified buyers of fine and special chemicals and laboratory reagents. Write today on business letterhead for your copy!



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your production needs?

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B&A Magnesium Nitrate is produced in two grades: Crystal and Crystal Reagent. Both assay 99% minimum and are low in undesirable impurities. Being virtually free from iron, lead and chlorides, the Reagent grade is particularly suited for use as a source of very pure magnesium oxide. Uses for Magnesium Nitrate include the preparation of catalytic mixtures for organic synthesis and preparation of catalysts for the petroleum industry. It is also used in the manufacture of dry colors and in pyrotechnics.

★ SODIUM FLUOBORATE, Technical— $NaBF_4$

B&A Sodium Fluoborate is a white, free-flowing crystalline powder assaying 94% minimum. In the metal industry, it finds use in heat-treating aluminum alloys and as an inhibiting agent in powder metallurgy. It is also used in preparation of metal surface-treating compounds.

★ POTASSIUM BORATE, Tetra-Purified— $K_2B_4O_7 \cdot 5H_2O$

B&A Potassium Borate, Tetra, is offered in the form of white uniform crystals assaying 99.5% minimum. It is used in the manufacture of brazing and welding fluxes; in heat-treating salts; and in preparation of diazo dyes for blueprint paper.

★ POTASSIUM ACETATE— $KC_2H_3O_2$ Crystal, N.F. and Technical 60% Solution, Technical

B&A Potassium Acetate is produced in crystal and solution forms to meet varying industrial requirements. All grades are notable for consistent high purity and uniformity. The crystal grades assay 99% minimum. Potassium Acetate is used in manufacturing pharmaceuticals and fine organic chemicals; as a humectant in the production of paper, textiles, leather, rayon, cellophane, glue, etc.; to control humidity in warehouses; and as an ingredient for anti-freeze mixtures.

If you have ever done any tracking you'll probably recognize these tracks as (1) 'Coon; (2) Bear; (3) Deer; (4) 'Possum.

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SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

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"That's Interesting"

Boiler shell numbers illegible — ?

Recently, when it was discovered that identification numbers on shell of a crane boiler were obliterated by corrosion, licensing authorities could not start inspection. At this point, Sam Tour & Co., Inc., Consulting Engineers and Metallurgists, were called upon.

Boiler insulation was removed from around the area at which the numbers were believed to exist. This area was cleaned and then given an acid etching treatment. Numbers then became legible and disclosed that the boiler had been inspected in three different years. Also, that it carried a National Board serial number and a National Society of Engineers number. This information satisfied inspection and insurance authorities and a license was granted. (Summarized from "Asbestos"—Vol 33 — No. 4, published by Secretarial Service, 808 Western Savings Fund Bldg., Philadelphia, Pa.)

Wonders of modern photography

Wonders of the modern photographic world were brought before the members of the Photographic Society of America at their recent convention in Detroit. To demonstrate the speed of "hot" photography, movie cameras were turned on the audience. The 16 mm film was processed with heated photo solutions and immediately projected, all in less than 10 minutes.

This meeting also marked the first public showing of a Xerography process, permitting reproductions from either negative or positive microfilm originals including on-the-spot making of multilith plates. From these plates, Haloid Corp. technicians ran off souvenirs for the audience.

The Baldwin Photoelectric organ was demonstrated. This instrument uses high-resolving power photographic plates to control tone and pitch.

Fill propellers with sponge rubber

An airplane propeller filled with sponge rubber is now being produced at the Hamilton Standard Division of United Aircraft Corp. Light as a feather, bone hard and strong, the hard sponge fills the void between the propeller blade core and shell. This keeps the latter from vibrating in and out under extreme pressures, and supports it against the impact of anything that may be thrown up by the plane's undercarriage.

The new filling compound, called HS 160, has three principal components: Hycar OR-15, an oil resistant rubber manufactured by B. F. Goodrich Chemical Company, phenolic resin and nylon. Blowing agent used to foam the rubber-resin blend is the highly reactive chemical azodiisobutyronitrile. (B. F. Goodrich Chemical Company, Rose Bldg., Cleveland, Ohio.)

Add synthetic rubber to paper

A new and economical method has been developed to add synthetic rubber, neoprene, to paper. Neoprene can be added in latex form to the pulp before it is made into paper. Papers offer such advantages as wet strength, chemical resistance and general improvements in physical properties.

These papers have performed successfully in tests in such applications as gasket paper and multiwall bags as well as industrial filter paper. A consumer product now under development is a washable rug that has unusual wearing qualities. (E. I. du Pont de Nemours and Co., Inc.)

NBS has most precise standard of length

The National Bureau of Standards is observing its 50th anniversary this year with announcement of the most precise standard of length that can be expected. It is based on the wavelength of light from a single pure isotope of mercury transmuted from gold. It can be used by laboratories anywhere more conveniently than previous similar standards. It is far more precise than the famous platinum-iridium meter bar in Paris. (From Industrial Bulletin, Arthur D. Little, Inc., Cambridge, Mass.)

"That's Interesting"

Tantala-silica gel catalyst

The Davison Chemical Corporation, Baltimore, has contracted with RFC Office of Rubber Reserve to produce a tantala-silica gel catalyst for deriving butadiene used in making synthetic rubber. The catalyst is 2% tantalum pentoxide and 98% silica gel. The gel in the catalyst is used for the condensation of acetaldehyde to crotonaldehyde. The crotonaldehyde is an intermediate product which is reduced to butadiene by the tantala in the catalyst, with the ethanol acting as a hydrogen donor.

California rosin

Five hundred pounds of rosin per ton of stumpwood could be taken from California pine forests, according to Arthur B. Anderson, University of California College of Agriculture. Rosin from Jeffrey and Ponderosa pine is comparable in quality and yield to that from old growth pine stumpwood in southern states.

Magnetic recording rubber

A new magnetic recording rubber made from a special neoprene base has been announced by the Brush Development Company, Cleveland 14, Ohio. Highly efficient magnetic oxide has been pigmented into the neoprene with an unusually good degree of uniformity. Included in the base material is a permanent lubricant which virtually eliminates wear of both medium and associated recording head. Mechanical compliance of the medium provides for intimate contact with the recording head. The recording bands have been primarily designed for use stretched over supporting drum.

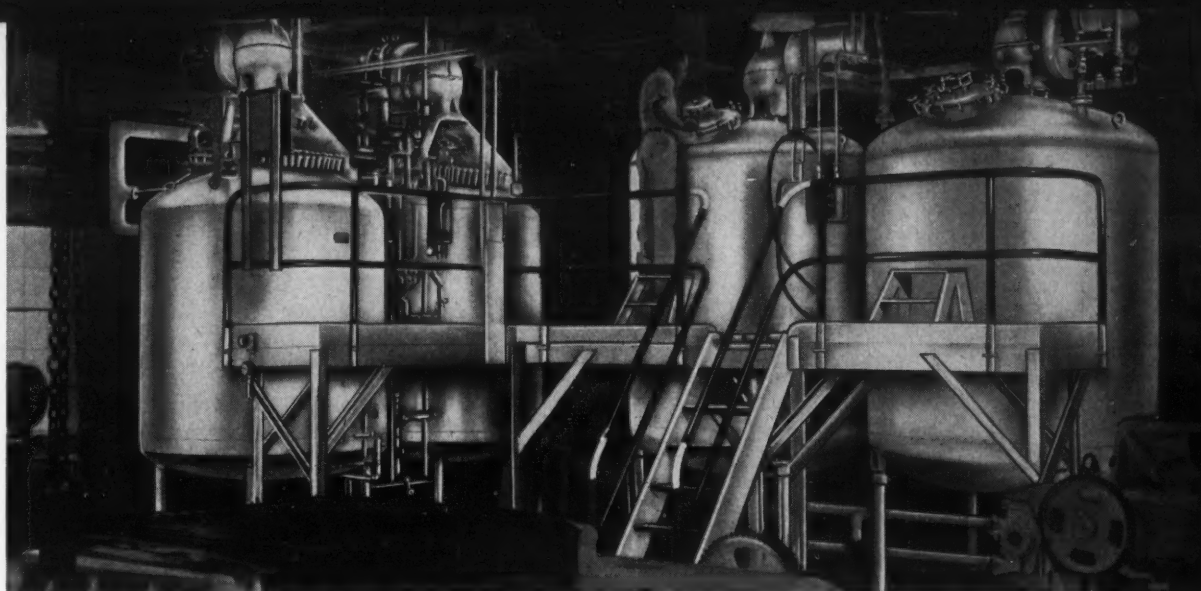
Perforated his way to success

In the early days of oil refining, filter presses were made up of alternate discs of woven wire and canvas. As iron sheets with holes drilled in them were regarded as much better their production began, the holes being drilled on a drill press. This method of manufacture was too costly, as was the multiple drill press. Eli E. Hendrick conceived the idea of punching a row of holes across the full width of the sheet at one stroke. His first simple machine was the forerunner of the modern perforating press.

Today this company meets needs covering wide variety of styles and sizes of perforations from twenty-thousandths of an inch diameter in very thin materials up to 8½ inch diameter in material ¾ inch thick, or even more. (Summarized from 5th Anniversary booklet — Hendrick Mfg. Co., Carbondale, Pa.)

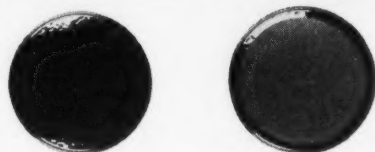
(Continued on third cover)

For more information on product at right, specify CP 7969 . . . see information request blank between pages 2-3.



USERS, who have tested this new glass, find that it is at least three times more resistant to alkaline solutions than any Pfaudler glass formerly available.

How new Pfaudler **ALKALI-RESISTING** Glass can save you time and money all along the line



COMPARATIVE TESTS show that new Pfaudler alkali-acid-resisting glass (left) withstands buffered NaOH, pH 11.5 at 212° F. for 30 days with no noticeable change, while former high-quality Pfaudler glass (right) is severely etched under the same conditions.

WHY the chemical process industries prefer glass-lined equipment:

1. Pfaudler glass, backed by steel, is one of the most durable materials of construction.
2. Resistance to all acids (except hydrofluoric)—now combined with resistance to alkaline action for even greater flexibility and service life.
3. Product purity is improved by elimination of metallic contamination.
4. Ease of cleaning and sterilizing protects product quality, saves time and labor costs.
5. Polymers will not adhere to glass surface.

Pfaudler glass backed by steel—*one of the most durable materials of construction* known to man—is now better, more flexible, and more economical to use than ever before!

ACID-RESISTING, TOO!

The new Pfaudler glass was specially developed to give longer life to glass-lined equipment where alkaline reactions are encountered, but *without any reduction whatsoever in its acid-resisting properties*. It promises to solve many chemical processing problems in the pH range from 9 to 12, which, until now, have been unusually severe on glass-lined equipment.

ADDED FLEXIBILITY!

Now, for the first time, the new Pfaudler glass makes it possible for you to go from acid to alkaline solutions in the same vessel. And the easy-cleaning features of Pfaudler glass-lined equipment allow you to make the change in minimum time.

HOW YOU SAVE . . .

This new flexibility means that you need only one vessel where dissimilar operations formerly required two. What's more, you can standardize on a single type of unit and narrow down on spare parts. You'll need fewer structures and be able to save space, too. And use of the new glass may even eliminate many of your valve, piping, pumping and gasketing problems.

MANY APPLICATIONS!

Many uses are indicated for vessels lined with the new Pfaudler Alkali-Resisting glass. For example, neutralization of acid solutions in the same processing unit; storage of mild alkalis; processing of alkaline reactions within the range of pH 12 and up to 212° F. Are there other uses in *your* processing?

GET ALL THE FACTS! Send the coupon today for full details on this amazing alkali-resisting, acid-resisting glass.

Pfaudler

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ENGINEERS AND FABRICATORS OF CORROSION RESISTANT PROCESS EQUIPMENT

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Title

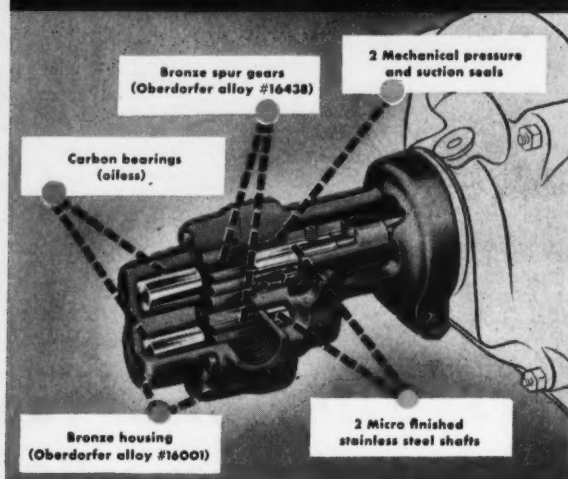
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They are intended to be used wherever a liquid has to be moved from one location to another in quantities up to 240 gallons per hour at pressures from 0 to 100 lbs. per square inch.

They are adaptable for a wide variety of industrial and chemical applications where a corrosion-resistant pump is required and space is limited. Their all-bronze body and gears permit use with most liquids.

* 110 volt AC, Motor standard but specially machined for pump mounting.

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0 lbs.	120 gal.	240 gal.
25 lbs.	110 gal.	220 gal.
50 lbs.	100 gal.	190 gal.
75 lbs.	95 gal.	170 gal.
100 lbs.	90 gal.	—

Dimensions and Prices (Pump only)

Pump No.	Height	Width	Length	Price
No. 1½ CCC	2½"	2½"	4¾"	\$20.00
No. 2 CCC	3½"	2½"	4¾"	22.50

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Complete units with $\frac{1}{3}$ H.P. 110 volt AC thermal overload motors . . . prices on request.

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for PRODUCT DESIGNERS

DEPT. CP-5112

INDUSTRIAL PUMP DIVISION
Oberdorfer Foundries, Inc.
Syracuse, N. Y.

The View Ahead in Chemistry

By Dr. C. E. KENNETH MEES

Vice President in charge of research
Eastman Kodak Company

Studied at Kingswood School, Harrogate College, and at St. Dunstan's College in England. Received B.Sc. in 1903 and D.Sc. in 1906 from University College, London.

Came to America in 1912 to direct research for Eastman Kodak Company. Added department of synthetic organic chemicals during World War I. Acted as European manager at Kodak, Ltd., London, in 1923. Became director of Eastman Kodak same year.

Took present post in 1934, and also advanced research on cellulose ester yarn for Tennessee Eastman Company.

Author of 150 publications, receiver of numerous scientific awards, member of outstanding photographic and scientific societies in America and Europe.



IT IS quite impossible to see into the future of chemistry. The only indication that one can obtain is to look at the past and at the present, to assume that present trends will continue, and thus to deduce the future course of events.

The growth of scientific knowledge and its application to industrial technology is producing changes of great importance in our social and economic life. The rate of change is continuously increasing, and the process may be compared to an autocatalytic reaction, in which the rate is increased by the products of reaction. It may be that our present social system is in an unstable state and approaching a period of violent change (similar to an explosion in the reaction), after which it will settle into a new and stable phase.

Let us examine certain chemical problems on which much attention is being concentrated and the solution of which may be expected in the next few decades.

The fundamental problem of chemistry is the structure of the atoms, and the nature of the forces which hold the atoms together and enable atoms to combine to form compounds. The nature of the valency forces is being elucidated and, with a more complete understanding of this subject, chemists will be able to better direct their work on the synthesis of compounds and to understand many reactions which are at present obscure.

Turning to nuclear reactions, it is not unlikely that elements will be synthesized in considerable quantity in the near future. The greatest importance of work on atomic nuclei is that which leads to an understanding of the structure of the nuclei themselves and of the forces which hold them together.

The astronomer-chemist finds many things of interest. The relative abundance of the chemical elements in the cosmos may give a clue to the origin of the stars and of the solar system. Nuclear reactions taking place in the stars may be correlated with those which are studied in the physical laboratories. Reactions occurring at temperatures far greater and at pressures and vacuums much higher than can be reached on earth can be studied. Forms of matter can exist in space that cannot exist in the "crowded" conditions around, on and in the earth, and reactions can take place that are unknown to the earthbound chemist.

Today chemists are actively engaged in the study of the proteins of the living cell, in which the analysis of structure by means of X-ray is promising to be of use. An understanding of the mechanism of cell growth may even

(Continued on page 38)

WIRE MESH

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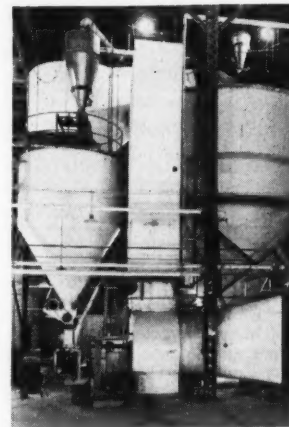
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CHEMICAL PROCESSING

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CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of
Processing Developments and Control

VOL. 14

DECEMBER, 1951

No. 12

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Published Monthly By

PUTMAN PUBLISHING COMPANY

111 East Delaware Place, Chicago 11, Illinois
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DECEMBER, 1951

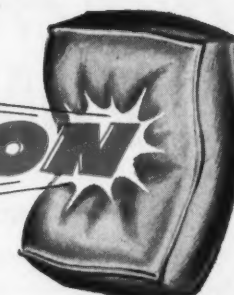
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The Link-Belt Electrofluid Drive comes to you in a "packaged" unit with NEMA mounting and shaft dimensions to facilitate ready installation. Book 2485 has complete information on five types of Link-Belt Fluid Drives — Electrofluid Drive, Electrofluid Gearmotor, Fluid Drive, Fluid Gear Drive and Fluid Coupling Drive.

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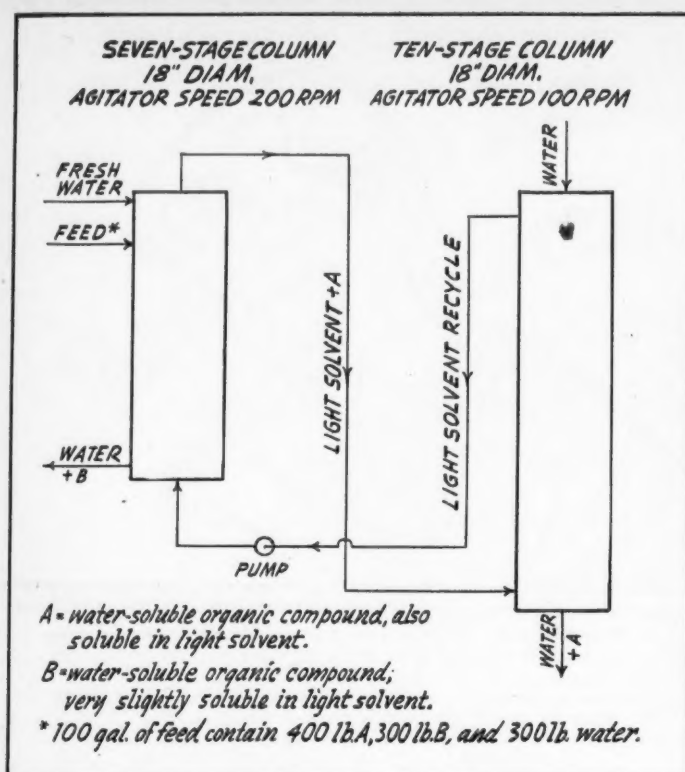


AMERICAN *Cyanamid* COMPANY

INDUSTRIAL CHEMICALS DIVISION, DEPT. CP-12
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Simplified flow diagram of new extraction process

New Solutions
OF PROCESSING PROBLEMS

Continuous Fractional Extraction Twice as Fast as Batch Process and Product Is Purer

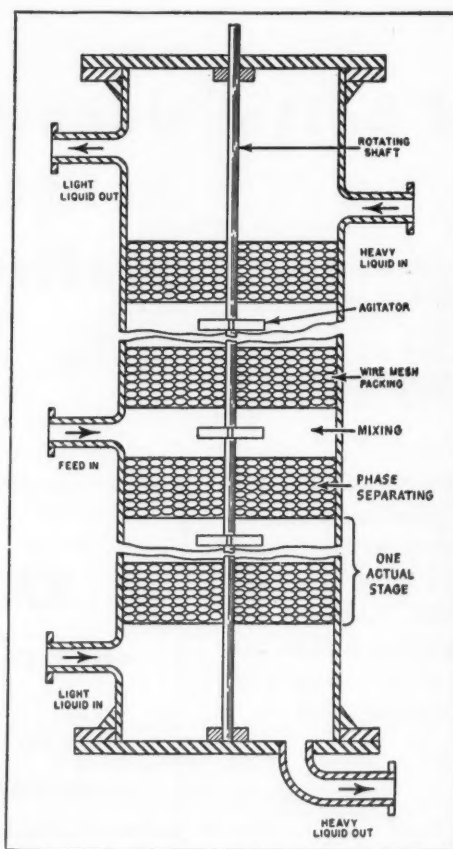
Effect of changes in process can be checked in much shorter time; solvent loss is too small to be measured

PROBLEM: Hoffmann-La Roche, Inc. Nutley, N. J., used batch liquid-liquid extraction to recover organic component A from a mixture of A, organic component B and water. It was necessary to extract three times, using three times the amount of solvent theoretically necessary. Eight hours were required for the total cycle, and final product (A) was 97% pure.

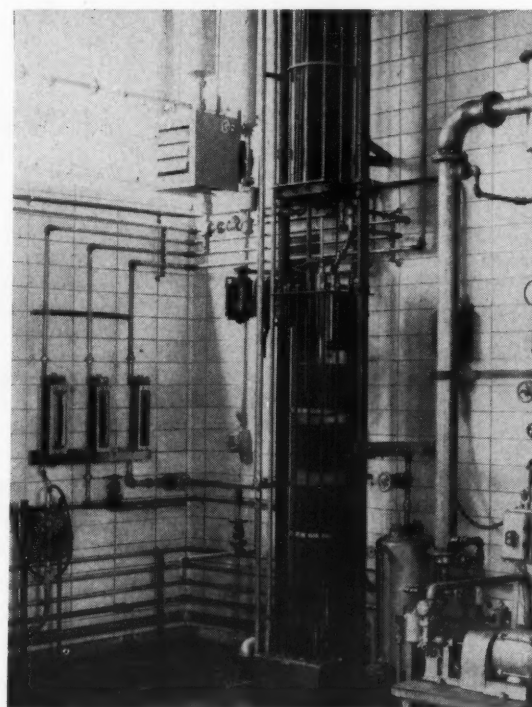
With this process, the effect of making any process change could not be checked before three weeks of operation at the new conditions. Another disadvantage: all solvent had to be recovered by evaporation and condensation, and this led to a fair amount of solvent loss.

Solution: The new fractional extraction process being used at the plant is illustrated by flow sheet with this article. Note that the organic solvent is continuously in recycle through the two extraction columns. Process handles 100 gph of feed containing 400 lb A, 300 lb B, and 300 lb water. The organic solvent is recycled at a rate of 400 gph.

The extractors are Scheibel type, design of which is shown in the accompanying schematic drawing. Tower consists of a cylindrical shell with an internal rotor shaft, and wire mesh packing spaced at uniform intervals. Agitators, mounted on the shaft between alternate packing, mix solvents



Typical design of Scheibel extraction column



These 12" diam glass pilot plant columns were used in studying process described in this article. The three stages of the upper column and five stages of the lower are plainly seen through the glass walls

and feed. Speed of agitation is critical and has much to do with extraction efficiency.

One mixing zone and the adjacent packing zone make up an actual stage. Intimate mixing occurs in the mixing zone, and substantially complete separation of the liquid phases occurs in the packing (calming) zones. True counter-current flow is maintained throughout the column.

Results: Complete cycle has been cut from eight to four hours. Average purity of A (moisture-free basis) is 98.8%. Important is the fact that the effect of any process change can be checked in a matter of hours instead of weeks.

Since no evaporation or condensation of the organic solvent is necessary, there is no measurable solvent loss. On top of this, it has been found feasible to use a lower cost solvent.

This type of system is believed adaptable to any inorganic salt or equivalent compound in aqueous solution, or to any organic compound in water.

Scheibel extraction columns are being made in a wide variety of sizes and with many types of materials of construction.

CHEMICAL PROCESSING

struction, to suit specific applications.

(Basic design is credited to Dr. E. G. Scheibel of Hoffmann-La Roche. Columns are built exclusively by Otto H. York Co., Inc., Dept. CP, 360 Glenwood Ave., East Orange, N. J. . . . or for more information check CP 7976 on handy form, pages 2 and 3.)

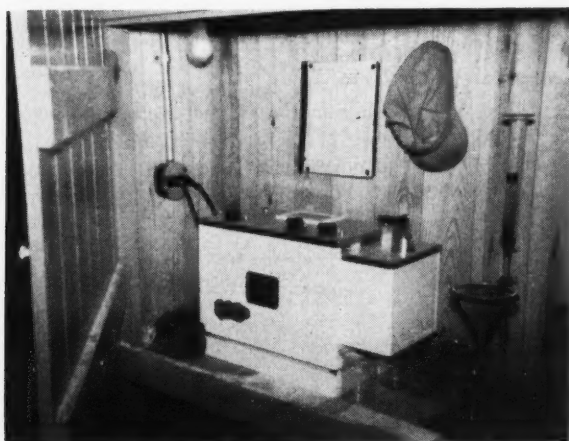
Learning when to transfer syrup to drying step stopped shutdowns . . .

electronic tester now determines when syrup has reached proper concentration to begin drying operations

Problem: Production of dried solubles had never reached estimated capacity at the alcohol plant of Midwest Solvents Company in Atchison, Kansas. Solubles are produced by concentrating and drying the syrup left after fermentation. Usually, low production could be traced to slow drying because not enough water had been evaporated from the syrup before it went to dryers. When an attempt was made to increase concentration in the evaporators before the drying step, plugged lines sometimes resulted because the syrup got too heavy.

Solution: Plant engineers knew that when moisture content of the syrup was in the neighborhood of 78 to 80% they got the best results with their drum dryers. This moisture range was safe to handle as far as plugging of the lines went also. Solving the problem hinged on findings some method of checking moisture content which did not take too much time. Frequent determinations could then be made to find when syrup was ready for transfer from evaporators to dryers.

In order to make testing easy, a wooden enclosure was built near the equipment involved. A Steinlite Liquid Cell Moisture Tester and accessories were installed and



Instrument was placed in a wooden stall built near drying operation

the operators of the evaporating-drying equipment were taught to use it.

In order to make a test they draw a sample of the syrup from the evaporator. Ten grams of this is weighed on a torsion balance and blended for two minutes with 100 ml of a hygroscopic solvent. After filtering off any undissolved matter, they pour the whole sample into the cell of the tester. Converting the meter reading into per cent moisture, by means of a table or calibration curve, they are able to arrive at the moisture content in less than six minutes after drawing the original syrup sample.

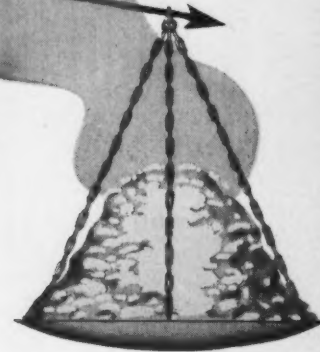
Operation of the Steinlite is based on electrical capacity

(Continued on next page)

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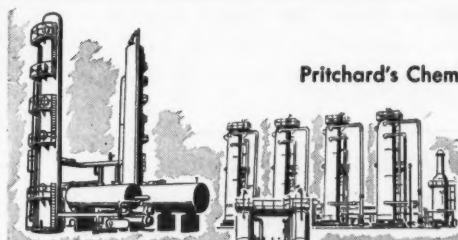
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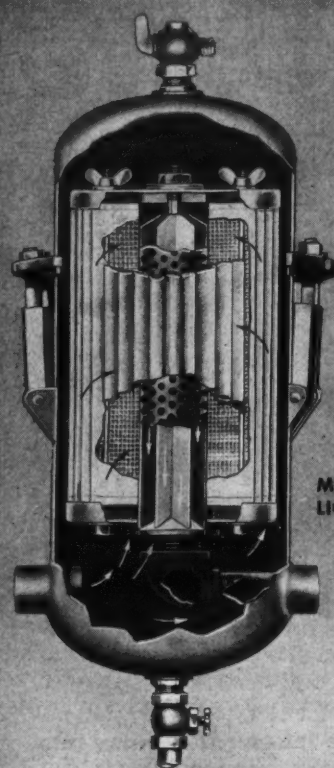
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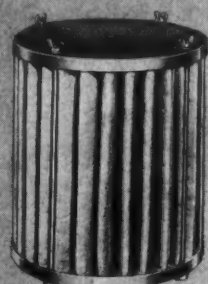
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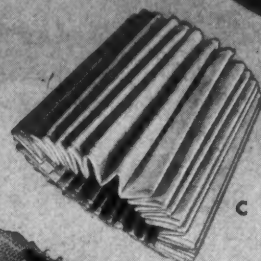
When inquiring check CP 7977 on handy form, pgs. 2-3



MODEL ELS
LIQUID FILTER

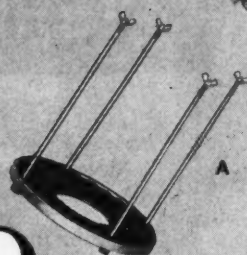


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REMOVED FROM
PRESSURE HOUSING



EXPLODED VIEW OF
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- B. Finned insert form.
- C. Slip-On Type filtering medium.
- D. Top plate and gasket.



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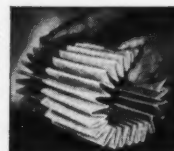
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DOLLINGER
PROTECTOR
STAYNEW FILTERS

NEW SOLUTIONS of processing problems

(Continued from preceding page)

measurement of the test cell. Cell wall and center rod form concentric electrodes of a capacitor which tests the solvent-water solution at radio frequency. Since water has an unusually high dielectric constant (more than ten times that of most common substances), this method provides a quick test which is sensitive enough for most routine analysis. Accuracy on many materials is about 1/2 of 1% moisture.

Results: Since February of this year, when the tester was installed, production of the drying operation has risen to above the estimated capacity. There has not been a single shutdown for cleaning of the lines because they were able to make sure that the syrup never got too heavy. Midwest's chief engineer is satisfied and Steinlite is a permanent part of the installation.

(A product of Fred Stein Labs., Dept. CP, Atchison, Kansas, the Steinlite is sold exclusively through Seedburo Equipment Co., Dept. CP, 618 W. Jackson Blvd., Chicago 6, Ill. . . . or for more information check CP 7979 on handy form, pages 2 and 3.)

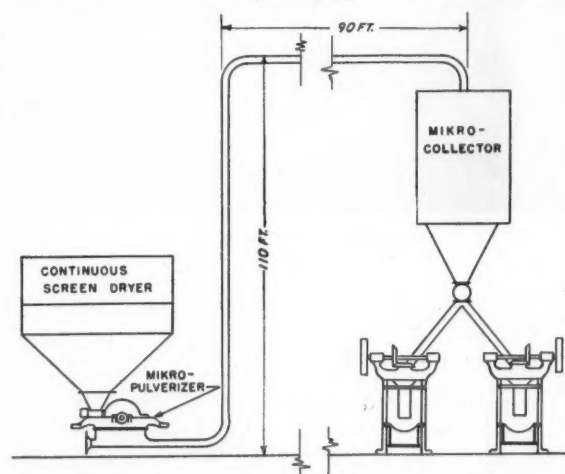
Testimonials on use of moly-base lubricants

Bulletin 93 packs eight full pages with industrial case histories describing the use of molybdenum-based lubricants in various applications — threaded connections, extreme temperature lubrication, instruments, etc. Issued by The Alpha Corporation, Dept. CP, 179 Hamilton Ave., Greenwich, Conn. When inquiring specify CP 7980 on handy form, pages 2 and 3.

Simple air conveying system cools as it carries from pulverizer to collector . . .

dust-tight installation found less costly than other types of cooling-conveying systems

Problem: To grind material being discharged from a dryer at 225°F, cool to 105°F, convey to packaging machines, and ventilate packaging machine dust hoods.



It was imperative to prevent escape of dust throughout the processing.

Job could be done with mechanical conveyors equipped for cooling, but such an installation would be highly expensive.

Solution: Arrangement shown in sketch was put into

CHEMICAL PROCESSING

When inquiring check CP 7978 on handy form, pgs. 2-3

NEW SOLUTIONS

operation. Circuit is continuous from the dust hoods to the ground material pick-up under the pulverizer, and thence to the Mikro-Collector. The fan on the clean air side of the collector draws air through the circuit, conveying both the pulverized material from pulverizer and dusty air from the packaging hoods. This air also cools the material to the desired temperature as it carries it.

The Mikro-Pulverizer used here is the No. 2. With a 10-hp motor, this unit pulverizes 2000 lb/hr of white lead to give 99.99% through 325 mesh. Rate on carbon black (same fineness) is 1500 lb/hr. Unit employs the swing-hammer principle.

The Mikro-Collector is a bag type unit in which dust-laden air enters the inside of the felt filter cylinder and is filtered as it passes through the bag wall. A blow ring travels up and down the outside of the filter cylinder, continuously dislodging deposited product (by combined blowing and flexing of bag) which falls into hopper bottom. From here product goes out of the unit through rotary airlock.

All of the filtered air is exhausted from the housing by a volume fan with shrouded radial blades. In some installations the collector is operated as a pressure type unit by having the fan precede the dust collector in the air circuit.

Results: Installation fully meets specification that it must not allow dust escape. Method of conveying adopted is far less costly than other methods first considered.

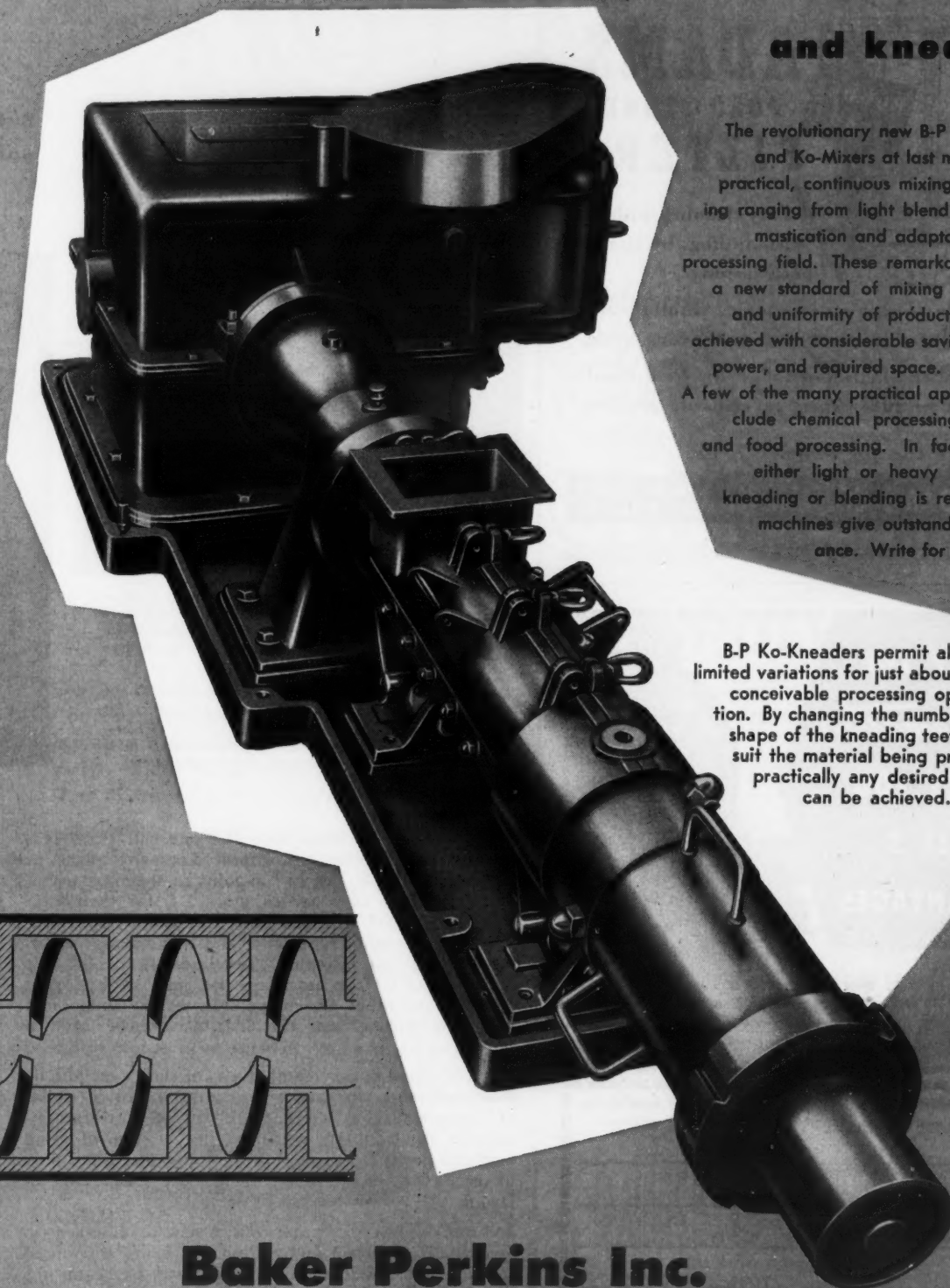
This type of conveying system can be thoroughly cleaned with relative ease, and does not cause metallic contamination that may often result from the moving parts of mechanical systems. When desirable, the air discharged from collector can be returned to the processing area, thus reducing loss of heated or conditioned air.

(Installation made by Pulverizing Machinery Company, Dept. CP, Chatham Road, Summit, N. J. . . or for more information check CP 7981 on handy form, pages 2 and 3.)



For more information on product at right, specify CP 7982 . . . see information request blank between pages 2-3.

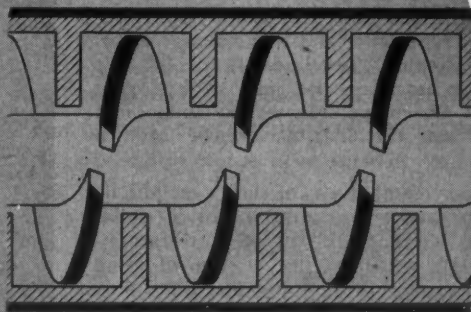
announcing! the new Baker Perkins "list system" ko-kneaders for continuous mixing and kneading



The revolutionary new B-P Ko-Kneaders and Ko-Mixers at last make possible practical, continuous mixing and kneading ranging from light blending to heavy mastication and adaptable to every processing field. These remarkable units set a new standard of mixing effectiveness and uniformity of product that can be achieved with considerable savings in labor, power, and required space.

A few of the many practical applications include chemical processing, foundries, and food processing. In fact, whenever either light or heavy duty mixing, kneading or blending is required these machines give outstanding performance. Write for further facts.

B-P Ko-Kneaders permit almost unlimited variations for just about every conceivable processing operation. By changing the number and shape of the kneading teeth to suit the material being processed, practically any desired result can be achieved.



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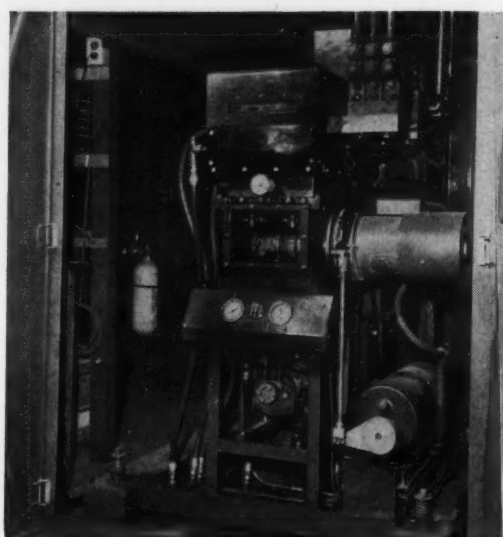
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Mechanical Rectification 96% Efficient for Voltages Around 275 DC



Vital part of mechanical rectifier is switching mechanism that makes and breaks circuit in each phase when current flow in phase is zero. Driving mechanism for contacts is seen behind glass panel. It is powered by synchronous motor

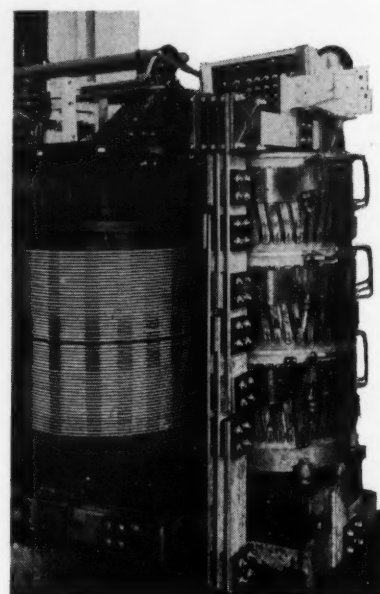
Commutating reactor (right) puts zero "step" in AC sine wave. At left is one of the three coils of power transformer. Photo was made during manufacture of the Buffalo Electro-Chemical power transformers

PROBLEM: About two and one half years ago, the Buffalo Electro-Chemical Company plant in Tonawanda, N. Y. reached a point in their expansion program where they needed more DC for their electrolytic reactions. At that time, the power house contained two mercury arc rectifiers and two motor-generator sets to rectify the incoming 25 cycle AC to the 280 volt DC required for the processes. Products are hydrogen peroxide and other per compounds, via the ammonium persulfate process and the Electrochemische Munich process.

The additional power required was of such a magnitude that conversion efficiency was a prime factor in choice of equipment with which to provide the greater DC capacity. In addition, there was the question of using available power-house space to best advantage, not only in space economy but in arranging a convenient over-all layout.

Solution: Just about that time, a new development in mechanical (contact) rectification was being announced in the United States. The device was based on the Siemens Schuckert "Kontaktumformer" which was introduced in Germany in 1940. Buffalo Electro-Chemical learned that the mechanical rectifier was capable of

**Buffalo Electro-Chemical Company found
unit fitted well with their requirements**



operating with high efficiency at voltages of 400 volts and below, and further investigation showed that the new device was suitable also as to space requirements. With efficiency and space questions answered, the way was opened for the first mechanical rectifier installation in American industry.

The installation consists of two rectifiers con-

Part of control panel board for two mechanical rectifier units at Buffalo Electro-Chemical Company in Tonawanda. First two sections control one unit. Second two sections (one shown) control the other

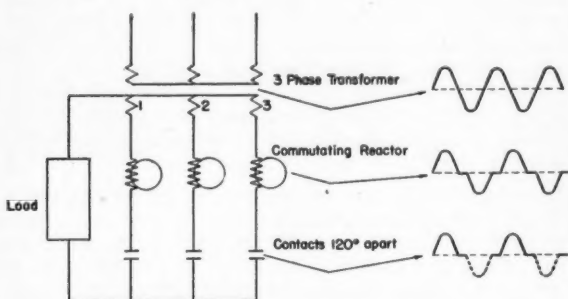


CHEMICAL PROCESSING

nected in parallel. Separate steel enclosures, housing the rectifiers, their controls and protective circuit breakers, are nicely arranged in two banks, facing each other across an operating aisle. Primary AC is 11,000-volt stepped down to output voltage by standard type power transformers.

Previous objection to contact rectifiers — near-impossibility of breaking circuit in each phase exactly at zero current flow — has been overcome in this type. Current in each phase is passed through a commutating reactor which puts a short "step" of zero current between alternations of the AC sine wave. This gives time for the synchronous motor driven mechanical switch contacts to open and close without sparking and arcing and with practically no contact voltage drop.

This almost negligible loss through the contacts is a major reason that the mechanical rectifier has such high efficiency. It is a well-known characteristic of mercury arc rectifiers that the efficiency curve droops at lower voltages, owing to the constant voltage drop through the arc.



Here's what happens electrically in the mechanical rectifier

Outgoing DC voltage can be regulated in a manner similar to that of a mercury arc rectifier. Where various voltages are needed, the power transformer can be equipped with an off-load tap changing switch or with on-load tap changing gear, for coarse regulation.

Results: Features of the mechanical rectifier have pleased the Buffalo Electro-Chemical Company. Chief among these is the high efficiency in the voltage range of 50 to 400 DC. This means it is possible to obtain high conversion efficiency without going to high DC voltages. The mechanical rectifier's efficiency remains over 94% down to 50 volts DC. No other means of conversion can claim such high efficiency in this voltage range.

Light weight of the mechanical rectifier can be readily noted at the Tonawanda installation. Heavy foundations are not needed, except as usual for power transformers, and vertical space requirements (as well as floor space) are small.

Two additional mechanical rectifiers were installed in the Tonawanda plant of the Buffalo Electro-Chemical Company during the month of September, 1951. For the company's Vancouver, Washington, plant, one mercury arc rectifier and three mechanical rectifiers have been ordered.

(Mechanical rectifiers are made by the I-T-E Circuit Breaker Company, Dept. CP, 19th & Hamilton Sts., Philadelphia 30, Pa. . . or for more information check CP 7985 on handy form, pages 2 and 3.)



HOT NEWS

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for granular or fine grinds

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For close to 30 years MIKRO engineers have striven not only to meet the day-to-day needs of our many customers—but to anticipate the requirements of the processing field.

Now, as one of our recent developments, we offer a MIKRO-PULVERIZER with all the time-tested qualities of the older model—but with internal improvements that entitle it to consideration as a BRAND NEW machine.

The new MIKRO-PULVERIZER has particular value in the grinding of heat-sensitive materials. When tested on certain

key materials it has effected a 25% reduction in temperature rise and a corresponding decrease in horsepower consumption. Or, in lieu of the horsepower savings, it has provided a 30-50% increase in production.

The enhanced efficiency of the new MIKRO-PULVERIZER widens its field of application by making possible the grinding of some materials hitherto found baffling or impossible to handle.

This project is still in the development stage. We know it works on certain materials and we are endeavoring to estimate its range. Right here, you can help yourself by letting us try this new grinding method on your own material in the MIKRO Laboratory. The test will cost you nothing, but it may solve your problem and bring you increased results and savings.

Investigate the possibilities
of this new MIKRO-PULVERIZER,
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When inquiring check CP 7986 on handy form, pgs. 2-3

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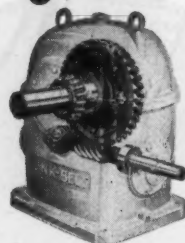
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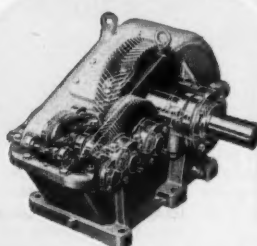
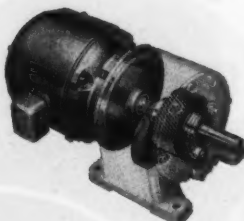
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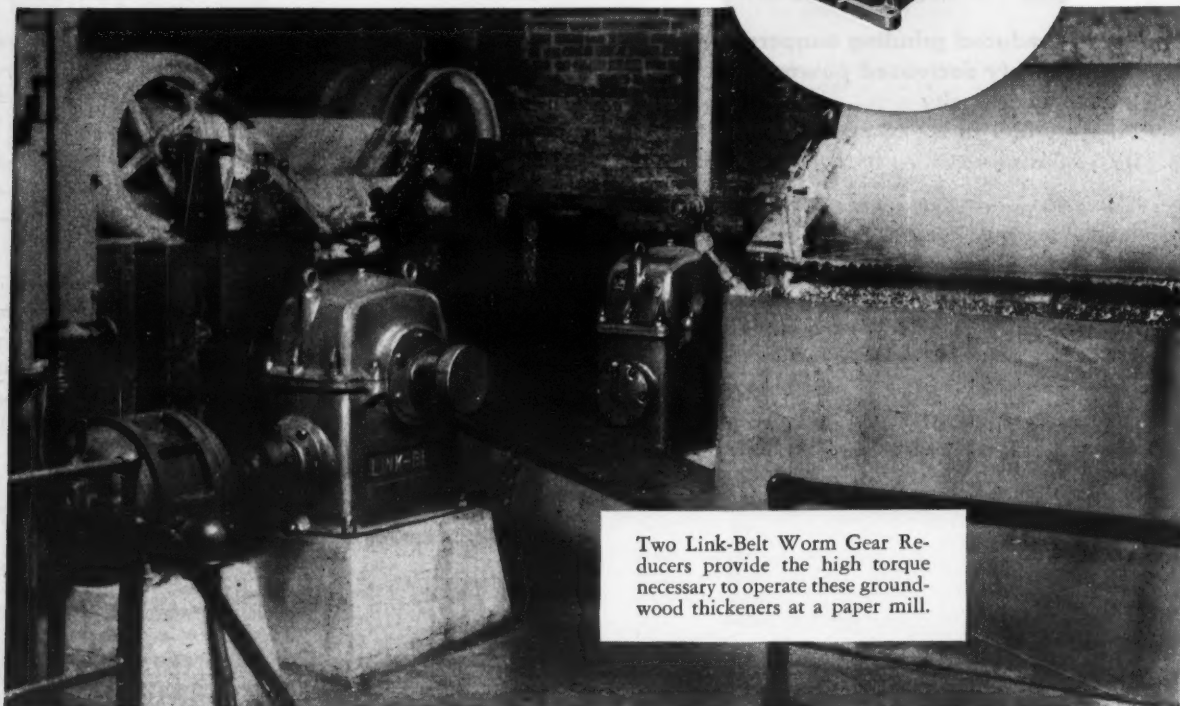


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Two Link-Belt Worm Gear Reducers provide the high torque necessary to operate these ground-wood thickeners at a paper mill.

NEW SOLUTIONS of processing problems

Accuracy, speed, and safety found in meters for batch delivery . . .

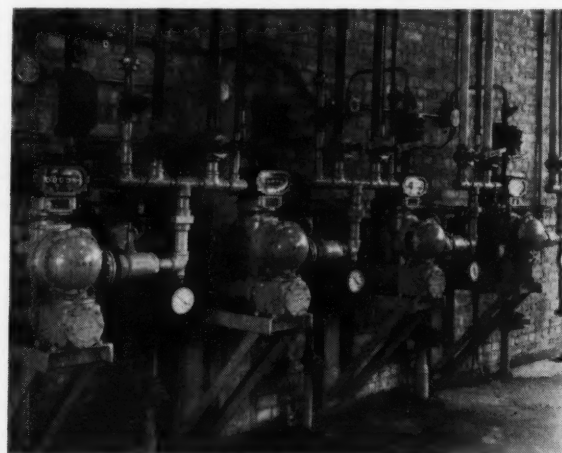
they handle flammables like ether and alcohol, as well as oils in preparing stencil coating

Problem: Preparing coating material for mimeograph stencils calls for accurate proportioning of various oils and waxes, etc., as well as the solvents (ether and alcohol). When these were mixed at the old A. B. Dick Company plant in downtown Chicago, the ingredients were handled manually — drums and cans being used to measure them into a mixing tank.

Besides hazards involved in using this method for handling ether and alcohol, a considerable amount of time and labor was required. Above all, the human factor made accuracy a questionable element in the tricky preparation of the coating material.

Solution: When the company moved to its new plant at Niles, Ill., company engineers designed a semi-automatic layout to improve the accuracy, safety, and labor requirements of this process step. Mixing tanks were set into a conducting concrete floor to eliminate danger from static charge. All quantity components of the mixture were stored in underground tanks where safety was combined with the advantages of tank-car receiving.

In order to bring the components to the mixing tanks, 2" pipes and pumps were installed. At the mixing tanks themselves, Rotocycle batch delivery meters were put in. These meters, which handle up to 100 gpm, can be pre-set to deliver any quantity up to thousands of gallons. When the pre-set quantity is reached, the meter



These four meters handle the bulk of materials going into stencil coating compound

closes its built-in valve, and switches off the pump motor. In order to maintain its guaranteed accuracy of $\pm 0.2\%$, the meter has a calibration adjustment of $\pm 8\%$ and temperature compensation over a 100°F range.

Delivery, then, is based on volume at 60°F, and corrections for temperature (from 20 to 120°F) are made by the meter itself.

Installation of the meters call for an air and vapor separator before the volumetric chamber. This prevents the four revolving buckets of the meter from handling air and counting it as a volume of liquid. Strainers are built into the meter too.

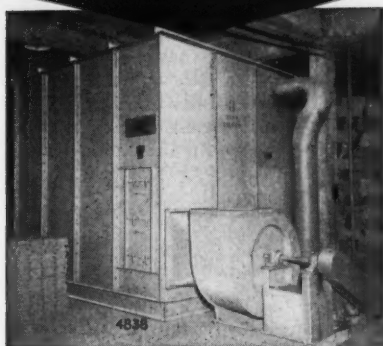
In operation, one register is set for the amount to be delivered. When flow through the meter begins, a

CHEMICAL PROCESSING

When inquiring check CP 7987 on handy form, pgs. 2-3

SLY

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- EFFECTIVELY —
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In this business of dust control — like many others — experience is the best teacher. We have been learning for 50 years—and still are. With thousands of installations, we have a wealth of experience in all industries. We'd like to share this wealth by discussing your particular problem with you. SLY representatives are trained and experienced engineers.

There's no obligation involved. You may be agreeably surprised at how *effectively* and *inexpensively* your dust problem can be solved. Ask for Bulletin 98.



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When inquiring check CP 7988
on handy form, pgs. 2-3

DECEMBER, 1951

NEW SOLUTIONS of processing problems

second register indicates the accumulating total. At the point where the proper amount has been delivered, the valve is closed and the pump is stopped. Allowance is made for manual operation without loss of accuracy.

In mixing stencil coating material, four of these meters are used to bring principal materials to two tanks. Certain materials are still loaded manually from drums because of their small amounts, or peculiarities.

In another section of the plant seven of the meters are used on compounding an oil-based vehicle for inks. In this case five meters handle input materials to four tanks where mixing, heating and agitation prepare the material for the next process step. The two other meters are used to transfer prepared ink-base to the following process step. Due to higher temperatures involved here, meters are temperature compensated up to 250°F.

Results: Metering system has cut production time and labor on the job. And even with the speed and efficiency of the present operation, plenty of flexibility is evident. Future changes in formulae, or odd size lots could be handled without difficulty. Since the start of operations at the new plant there have been no serious breakdowns or repairs. The step is considered trouble-free by plant management.

(Rotocycle meters are a product of Pittsburgh Equitable Meter Division, Rockwell Manufacturing Company, Dept. CP, Pittsburgh 8, Pa. . . or for more information check CP 7989 on handy form, pages 2 and 3.)

Damage to bottling machinery finish from spilled whiskey spirits reduced with plastic paint . . .

coating is tasteless, odorless, non-inflammable, and resistant to lubricating grease

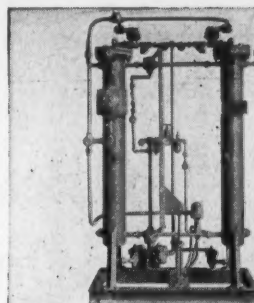
Problem: An annoying maintenance problem on National Distillers Products Corporation many bottling lines was damage to the finish of their machines from spilled whiskey. Spirits, it turned out, were a good solvent for nearly all paints and enamels which might otherwise find use on bottling machinery. Their low surface tension increased the difficulty, since even small quantities spread over wider areas than other liquids.

Solution: A vinyl-based plastic paint, Corrosite, was found to give a finish which has stood up under contact with spirits and has bonded well to metal. For the past several years, a Corrosite finish has been included as a specification on many machinery items.

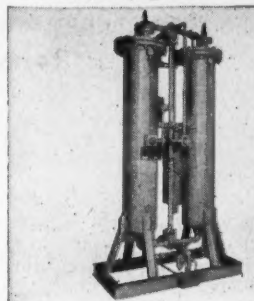
Results: Corrosite dries quickly and gives a tough coating which is tasteless, odorless, non-inflammable and which is resistant to grease from lubricated moving parts. It withstands hard use without chipping and this makes for easier maintenance. Also, it has been discovered that employees take an increased pride in the cleanliness of the entire plant when they work with machinery that keeps a continually clean, well-painted, and unscarred appearance.

Suppliers of new machinery for National Distillers employ spray methods for applying Corrosite, whereas this company follows the policy in its own plants of repainting occasionally by brush when bottling lines are down for maintenance and repair.

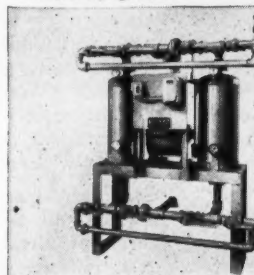
(Coating is manufactured by Corrosite Corp., Dept. CP, 405 Lexington Ave., New York 17, N. Y. . . or for more information check CP 7990 on handy form, pages 2 and 3.)



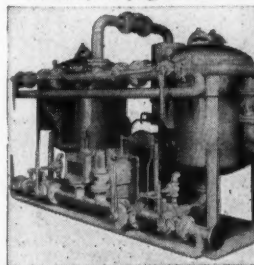
This Kemp Oriad Dryer is controlled by program timer. All operations, including lower reversals, fully automatic. Rated: 100 scfm, 100 psig, 70°F.



This Semi-automatic Kemp Oriad Dryer dries air for actuating tools, valves, etc.—dries process air and gases. Rated: 600 scfm, 100 psig, 70°F.



This Kemp Radiation-Cooled Dryer gives maximum efficiency with minimum maintenance and operating costs. Heating period terminates automatically. Rated: 300 scfm, 100 psig, 70°F.



This electrically activated Kemp Dryer is designed so gas stream is not contaminated by air normally used for reactivation. Rated: 3200 scfm, 100 psig, 70°F.

Cuts Costs on Moisture Control!

Kemp Dynamic Dryers dry Air, CO₂, Ammonia, Gasoline, Nitrogen, Propane to low dew points for as little as 1/4¢ per mcf

If you think drying air, gases or liquids costs too much—find out how Kemp can save you money! Hundreds of Kemp Dynamic Dryers control moisture at low cost in plants all over the country. Operation is guaranteed to your specifications and the cost is surprisingly low. Many Kemp users report drying to sub-zero dew points for as little as 1/4¢ per mcf—including all charges for labor, capital investment and materials!

Flexible Design

Kemp Dynamic Dryers are versatile—offer manual, semi-automatic or automatic operation. Desiccant is especially selected and compounded for the type drying your problem calls for. With Kemp you can dry air, gases, or liquids, control humidity in large or small areas, or eliminate moisture in materials. Gas, electric or steam regeneration is supplied as standard equipment.

Send for Information

Whether your moisture control problem is standard or special, you'll find Kemp has a Dynamic Dryer especially designed to solve it. Find out how Kemp engineering can be put to work for you to solve your problem . . . save you money. Write today and tell us your requirements. There's no obligation.

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OF BALTIMORE

DYNAMIC DRYERS

WRITE FOR Bulletin D-27 for technical information,
C. M. KEMP MFG. COMPANY,
405 E. Oliver St., Baltimore 2, Maryland.

When inquiring check CP 7991 on handy form, pgs. 2-3

Semi-alkyd Liquids Result from Heating Hard Resin with Unbodied Drying Oils in Open Vessel

Unusually large range of comparatively inexpensive drying and semidrying oils can be used for formulating useful coatings

USES: Hard resin produces semi-alkyd-type liquids by reacting chemically with any one of the common, unbodied oils. In turn, these semi-alkyds can be tailored for a variety of purposes: 1) spars; 2) floor paint liquids; 3) gloss, semi-gloss, and flat wall paint liquids; 4) wall sealers; 5) blending liquids for extending phthalic alkyds in architectural finishes; and 6) enamel liquids for use without phthalic alkyds.

Features: Processing advantages

— Semi-alkyds are produced by merely heating the hard resin with a drying oil in the processing kettle. Processing can be carried out in either closed or open vessels. In open kettles, even with air blanket, colors of semi-alkyds are pale enough for use in white paints and enamels when suitable oils are used. Affords efficient control of viscosity and acid number. Stable compositions with low portions of oil can be prepared which will reduce with mineral spirits to normal working consistencies at 28-30% nonvolatile.

Quality advantages — Semi-alkyds made with the hard resin are shown by tests to retain better flexibility than oleoresinous compositions with equivalent oil content. At equivalent oil length, the semi-alkyds are more compatible with long oil alkyds than are varnishes. Lower-oil-content semi-alkyds have good sealing properties and are useful in blending with alkyds to make self-sealing primers, flats, and undercoats.

Economic advantages — Because unbodied drying oils may be processed with the resin, cost of preliminary kettle-bodilying is eliminated. Unusually large range of comparatively inexpensive drying and semi-drying oils — alkali

refined sardine and menhaden, nonbreak soybean and linseed, safflower, and dehydrated castor oils — can be used for formulating useful, economic coatings. Savings can be effected in cost of varnish nonvolatiles when use is made of these oils, heretofore unsatisfactory for varnish preparations.

Description: It is now possible to prepare semi-alkyds using soybean oil and Pentalyne B-56 hard resin with conventional varnish equipment and procedures. The cooking procedure is simple and the time in the kettle is reasonable. These varnishes grade favorably against widely used medium-length dehydrated castor oil varnishes in color, drying performance, and enamel making characteristics.

Soy varnishes have additional promise as grinding liquids and as mixing and blending varnishes, particularly for blending with long oil alkyds. Performance tests indicate that Pentalyne B-56 soy varnishes may replace soya alkyds in interior architectural paints and

enamels, or may be blended with soya alkyds to make high quality, economic interior enamel liquids.

Cooking schedules for 15-gallon varnishes made with safflower oil or alkali refined fish oils are comparable to that of a soybean oil varnish. Viscosity, color and dry time, however, vary somewhat depending on the oil used. Safflower oil varnish is faster drying than the soybean oil varnish, and the fish oil varnishes are slower. All are, nevertheless, tack-free and flint hard on tin after 24-hours dry.

In 20-gallon oil length varnishes, safflower is intermediate to soya and linseed in speed of bodying, color, and drying. Soybean oil at this

oil length is a little slow in drying.

Particularly interesting are 20-gallon oil length varnishes made with alkali refined linseed oil. Rapid kettle cycles are achieved and good drying results, even more rapid than 15-gallon soybean varnishes.

Five-gallon alkali fish oil varnishes can be prepared which possess high viscosity and excellent non-penetrating properties. Varnishes of this general type provide a means of formulating improved flat and gloss paints customarily formulated with heavily bodied or limed oil.

A limed 30-gallon varnish containing equal parts linseed and fish oils can be used as the sole vehicle in flat whites. Good brushing, hiding, and formulation latitude are outstanding values here.

(Pentalyne B-56 is a development of Hercules Powder Company, Dept. CP, Wilmington, Del. . . . or for more information check CP 7992 on handy form, pages 2 and 3.)

USES: Triallyl cyanurate has properties that should make it of particular interest in polymerization reactions, pharmaceuticals, pest control, and as a chemical intermediate. Evaluation as a co-monomer, either as such or modified by reactions at one or more of the double bonds, is suggested.

Features: Offered in trial-lot quantities.

Description: Triallyl cyanurate is a reactive, tri-functional vinyl monomer (alkoxytriazine). It is stable at 125°C under nitrogen for periods up to 24 hours. In the presence of air at this temperature, polymerization starts within 2 hours. Has been known to polymerize violently in air when heated in the range of 160-170°C. Has been distilled successfully at temperatures as high as 162°C at 2 mm Hg.

Copper, cuprous chloride, cupric acetate, bronze, and other copper containing metals and salts cause violent polymerization. Other metals which promote polymeri-

Ready for Evaluation — Triallyl Cyanurate

**Reactive monomer offered in
trial-lot quantities**

zation are nickel, manganese, and mercury. Inhibitors such as hydroquinone may stabilize triallyl cyanurate. Using a specially prepared sample of triallyl cyanurate having a purity of 99.5 ± 0.1 mole percent, following

physical properties were determined:

Appearance	Colorless liquid or solid
Molecular weight (theory)	249.26
Freezing point, °C	27.32 ± 0.02
Flash point, Tag open cup, °C	>80
Density, gm/cc @ 30°C	1.1133
Refractive index, n_{25}^D	1.5049
Viscosity, cp, 30°C	12.55 ± 0.03
Solubility, gm/100 gm solvent	
Water	0.6
Heptane	80
Acetone	Miscible
Benzene	Miscible
Chloroform	Miscible

Uses of triallyl cyanurate has been suggested for plasticizing, softening, and swelling agents in cellulose and phenol-formaldehyde resins.

Polymers formed from triallyl cyanurate itself have glass-like properties, being hard, clear, and somewhat brittle. Laminated materials may be made by impregnating sheets of glass cloth with the monomer, pressing sheets together, and initiating polymerization with heat

CHEMICAL PROCESSING

and a latent catalyst. Mats prepared in this way have a high flexural strength which remains essentially unaltered for long periods of time, even at temperatures above 230°C. Copolymers made from triallyl cyanurate and an alkyd resin, styrene, or other vinyl monomer also show good flexural strength. Alkali, acid, and heat resistance are high.

Triallyl cyanurate is compatible with alkyd resins such as maleic anhydride-ethylene glycol, fumaric acid-ethylene glycol, and others, making it a relatively simple matter to carry out copolymerization reactions. Cure may be accomplished rapidly and without the presence of air. Resins of the type described above are suggested for use in laminates, molding compounds, coating compositions, adhesives, and for casting especially where high temperatures are encountered.

Uses of triallyl cyanurate in resins and plastics are not restricted to vinyl polymerizations. Transesterification reactions with numerous glycols at temperatures in the range of 100-140°C are reported to give products with a variety of properties. Some are clear gels, others are rubbery solids, and still others are viscous oils. These polymers have been suggested as plasticizers for other resins, and their textile softening properties are of value.

Polycyanurates in many cases may be polymerized further through their residual vinyl groups by the addition to the syrup of another unsaturated monomer along with a suitable catalyst. Reaction proceeds with minimum shrinkage, giving hard and sometimes brittle resins suggested for surface coatings and a variety of molding uses.

(Product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 7993 on handy form, pages 2 and 3.)

Advises protection of thermal insulation at points of wear



Special protection should be provided at points where thermal insulation may be subjected to more than ordinary wear and tear, advises the Magnesia Insulation Manufacturers Association.

Insulation that is exposed to mechanical abuse may be protected by means of a sheet metal jacket which will cover the entire area from possible damage. The jacket may be tack-welded or held in place with bolts or screws. Where required, expansion

joints with spring-loaded bolts may be provided in the jacket to compensate for circumferential expansion. Longitudinal expansion is permitted by lap seams at intervals of approximately 12 feet.

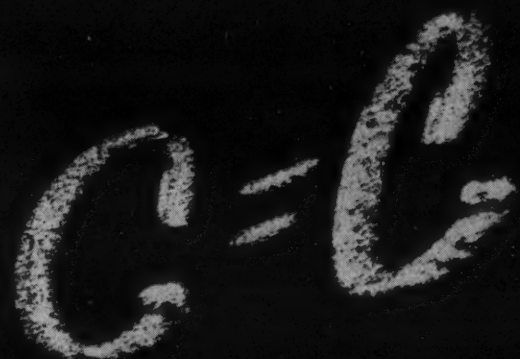
(Information received from Magnesia Insulation Manufacturers Association, Dept. CP, Washington 4, D. C.)

HAVE YOU

A USE FOR

A DOUBLE BOND?

*Look into
these olefins*



DIISOBUTYLENE

TRISOBUTYLENE

NONENES

A few years ago these higher olefins were laboratory curiosities—now they are tank car chemicals. Why? Because research chemists found uses for these *building blocks*.

Chemicals like octyl phenol, nonyl phenol, nonyl alcohol—higher acids, alcohols and aldehydes from the Oxo reaction—rubber chemicals and surface active agents—these are some of the products made from these olefins.

The possibilities go on—halogenation, sulfation, oxidation, hydrohalogenation, etc. Why not write for further information on these olefins? Put them into your research program—the result may be another profitable new product for you. The Atlantic Refining Company, Chemical Products Section, Dept. C-3, 260 S. Broad Street, Philadelphia 1, Pennsylvania.

Without obligation, please send me further information on: (DEPT. C-3)

____ **DIISOBUTYLENE**
____ **TRISOBUTYLENE**
____ **NONENES**

Name _____

Company _____

Address _____



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THE ATLANTIC REFINING COMPANY

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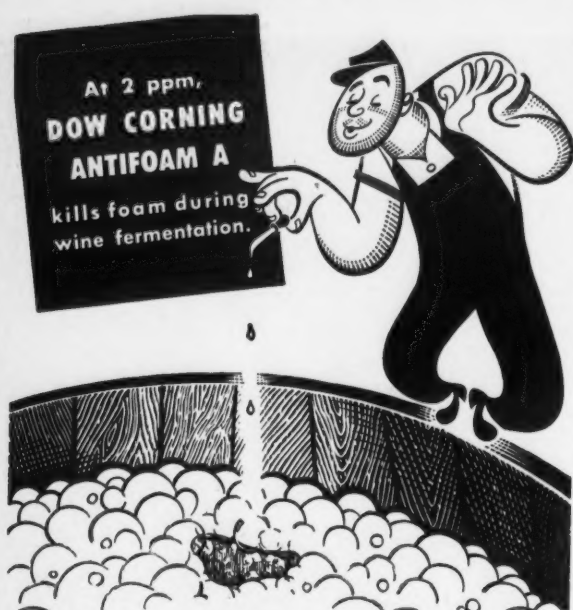
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When inquiring check CP 7994 on handy form, pgs. 2-3



Foam's a Fraud... Kill it With DOW CORNING ANTIFOAM A

To get the most out of your process equipment, add a trace of Dow Corning Antifoam A and use the extra space you've been wasting on foam! You'll process most of your most violent foamers, even under vacuum or continuous heat, without waste or hazardous overflow.

That's because Dow Corning Antifoam A kills foam faster and under more varying conditions than any other material known. It is odorless, tasteless and non-toxic; safe to use in food and drugs at concentrations up to 10 parts per million—many times the concentrations normally required to control foams.

Indeed, effective concentrations are so low that Dow Corning Antifoam A is not only the most versatile and efficient defoamer on the market, it is also the most economical.

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Dow Corning Corporation,
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sample of Dow Corning Antifoam A.

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When inquiring check CP 7995 on handy form, pgs. 2-3

Page 18

Materials

Failure in Rubber-to-metal Bonds Occurs in Rubber Itself

Low-viscosity, resin-emulsion
adhesive also recommended
for bonding wood, plastics

USES: For bonding metal, wood, or thermosetting plastics to themselves or each other. Especially recommended for natural or synthetic rubbers to metals.

Features: Strength of rubber-to-metal bonds is indicated by the fact that failure usually occurs within the rubber itself.

Description: Ardur 120 is a low-viscosity resin emulsion. Metal and plastic surfaces must be thoroughly degreased. Metal surfaces should also be shot blasted, sanded or chemically cleaned. Sand plastic and wood surfaces.

Natural rubbers should be immersed for about 4-5 minutes in concentrated sulfuric acid (sp gr 1.84) and afterwards washed thoroughly with water. Synthetic rubbers should receive this same treatment for 8-10 minutes. Rubber surfaces show numerous small cracks when flexed by hand after this treatment.

For bonds not involving rubber, Ardur 120 is brushed onto the surface to be bonded, or may be applied by spraying or roller coating. As much as 10% ethylene dichloride may be used for thinning to suit application method. Spread of about 4 lb/100 sq ft is recommended. Approximately an hour at room temperature or a few minutes at 50-70°C must then be allowed for evaporation of volatile solvent. It might be mentioned here

that treated surfaces may be held several days before proceeding with bonding steps.

Parts to be bonded should be clamped together with a pressure of about 50 psi and heated for sufficient time to allow adhesive to remain at 140-150°C for 15-20 min. Pressure should not be released until temperature has dropped to 90°C.

For bonding rubber to metal, adhesive is prepared by combining Ardur 120 with 15-20% (by weight) of methylated spirit, followed by 3-5% accelerator. Usable life of this mix is 3 days minimum. Mix is applied to both surfaces to be bonded. Spread and solvent evaporation time are the same as specified previously. Parts are clamped together with a pressure of about 10-20 psi and cured for 15-20 min at 110-120°C or 5 min at 140-150°C. Additional time must be allowed for heat to penetrate to the bond line.

Ardur 120 may be used without accelerator but pressing time at 140-150°C must be increased to 15-20 min. No attempt should be made to thin the adhesive with solvents.

(Ardur 120 is a development of Ciba Company Inc., Plastics Div., Dept. CP, 627 Greenwich St., New York 14, N. Y. . . . or for more information check CP 7996 on handy form, pages 2 and 3.)

Sole Use of Ethylene and Propylene Oxides Allows Formation of Nonionic Detergent in Flake Form

Member of a series of nonionics whose
properties can be tailored to meet
specific cleaning problems

USES: This series of nonionic detergents, of which Pluronic F68 is the recently developed flake form, has found use in the formulation of laundry detergents, mechanical dishwashing compounds, wool scouring agents and dyeing assistants. In addition, plasticizing values of the group have been demonstrated in phenol-formaldehyde type resins, low molecular weight polystyrene and some types of vinyl resins.

Features: Possibility of wide variation in the molec-

ular weight of the hydrophobic unit and in the weight ratio of hydrophobic to hydrophilic units in the structure of these nonionics — designated Pluronics — allows "tailoring" of properties to suit cleaning problems. Solubility in water, detergency, wetting action and surface tension lowering are some of the characteristics which can be controlled with-

in the molecular weight range of the products. All of the Pluronics are stable to precipitation by metal ions under ASTM test conditions and all possess good whiteness retention properties in detergent uses.

Description: Pluronics, a class of nonionic surfactants, are prepared solely from ethylene and propylene oxides. The general procedure consists of polymerizing propylene oxide to form polyoxypropylene glycol which is then reacted with ethylene oxide to form the nonionic

CHEMICAL PROCESSING

surfactant. By varying the quantity of ethylene oxide condensed with the polyoxypropylene glycol, products are obtained which range in physical form from mobile liquids to solids sufficiently hard to be flaked.

Pluronic F68, the flake form, is relatively non-hygroscopic and contains 100% active agent. It is miscible in water in all proportions and increases in wetting ability with increase in temperature. Under normal use conditions, it may be considered substantially non-foaming. It has excellent carbon suspending properties, being equal to or better than a high quality, low titer soap used in comparison tests.

No untoward dermatological effects have been demonstrated with any of the Pluronics via sensitization patch tests.

A tabulation of physical properties of the group discloses the following:

PROPERTIES OF PLURONICS

	L44	L62	L64	F68
Form	Oily Liquid	Oily Liquid	Oily Liquid	White Flakes
Odor	Slight	Slight	Slight	Slight
% Active Agent	100	100	100	100
Sp Gr at 25/25°C	1.062	1.037	1.066	—
Melting Point, °C	-11	-32	-6	51-54
pH of 2.5% conc @ 25°C	6-8	6-8	6-8	6-8

(Pluronics are being manufactured in pilot plant quantities at present by the Development Department, Wyandotte Chemicals Corp., Dept. CP, Wyandotte, Mich. . . . or for more information check CP 7997 on handy form, pages 2 and 3.)

Tests point up dynel's worth in contact with acids, salts, alkalis, amines . . .

effect of 80 chemicals on visual appearance, shrinkage and loss of strength checked

High resistance to a wide variety of acids, alkalis, salts, amines and bleaches was shown by 100% dynel fabrics tested recently by Better Fabrics Testing Bureau, Inc. In most of the corrosive solutions tested, dynel was either completely unharmed or marred only by slight discoloration. There was negligible loss of strength, and no shrinkage. Undyed dynel was immersed for 20 hours in 80 chemical solutions whose temperatures varied from room to boiling.

Fabrics were not affected in boiling 5% sulfuric acid. At the lower temperature of 50°C and in stronger solution (around 70% for instance), fabric lost some strength (no more than 10%) but did not shrink. In boiling 25% sulfuric, fabric was stained brown and lost 12% of its strength in the 20-hour test.

A 38% concentration of hydrochloric acid at 50°C did not harm the fabric. Dynel was stained brown in boiling hydrochloric, shrank about 5% and lost 10 to 12% of its strength.

At 50°C, in formaldehyde, the only effect was a slight yellow staining. At the same temperature, the fabric was unharmed by such chemicals as nitric acid, formic acid, oxalic acid in ethanol, benzene sulfonic acid, sodium hydroxide, ammonium hydroxide, ethylene diamine, hexamethylenediamine, pyridine, acetamide, diethyl ether and urea. Solvents which did not affect dynel also included ethyl alcohol, perchlorethylene, deodorized kerosene and toluene.

(Dynel is the acrylic staple fiber developed by Textile Fibers Department, Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y.).

DECEMBER, 1951



It pays to be basic!

OUR junior lemonade tycoons from the citrus country have a sound idea there—establishing *their own* source of basic materials and integrating all manufacturing operations. Bet you they'll sell more—and *better*—lemonade than any other kids on the street!

At Pittsburgh Coke & Chemical Company, we know the advantages of being basic and integrated in chemical production too. For example, we exercise a complete, step-to-step control of our production, from coal through coking, chemical processing and synthesizing of the final product. Thus, we're able to assure our customers con-

sistent maximum quality of product and continuity of supply.

These basic Pittsburgh Chemicals—benzene, phenol, cresol and phthalic anhydride to name just a few—are vital in the making of products as diverse as plastics, pharmaceuticals, dyes and insecticides. And their roles in defense production are just as varied and essential.

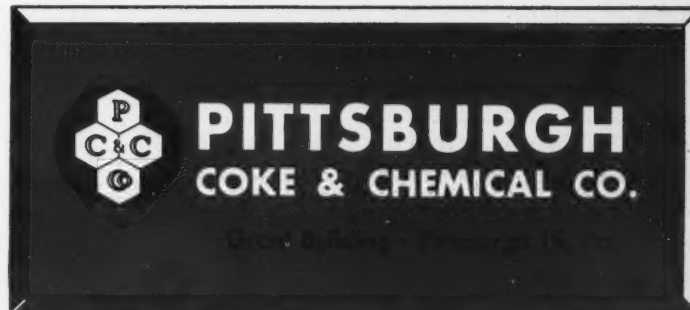
When you see the Pittsburgh Coke & Chemical Company name and trademark, remember that they represent a growing family of useful basic chemicals and related products which constantly serve the nation's industry and agriculture.

These are the products of

PITTSBURGH COKE & CHEMICAL CO.

Coal Chemicals Activated Carbons
Agricultural Chemicals
Protective Coatings Plasticizers
Green Bag Cement
Neville Concrete Products
Neville Coke Neville Pig Iron

W&O 3827 C

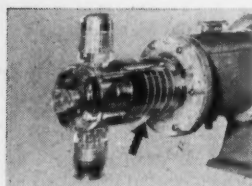


When inquiring check CP 7998 on handy form, pgs. 2-3

ADVERTISEMENT

Du Pont plastic superior to all other gasket and packing materials in chemical inertness

Du Pont "Teflon" tetrafluoroethylene resin inert to practically all chemicals, serves up to 500°F., has unique non-adhesive properties.



Uses: Gaskets; packing for pumps, valves, pistons, agitators; non-adhesive surfaces for use with sticky materials; electrical insulation.

Features: Inert to all chemicals except molten alkali metals and fluorine under extreme conditions, has zero moisture-absorption, serves at temperatures from -320°F. to 500°F., has extremely low coefficient of friction. Tough, resilient "Teflon" outlasts other gasket and packing materials as much as 300 times in some cases. Because of its unusual non-adhesive properties, the tackiest materials show little tendency to stick to "Teflon." It also has outstanding electrical properties.

Description: Du Pont supplies as molding powder, tape, and aqueous dispersions.

Demand for "Teflon" currently exceeds supply. However, we suggest you investigate its versatile properties for future application. We'll gladly discuss the availability of quantities for development work, and supply names of molders and fabricators of sheets, rods, tubes, or finished parts. For further information and booklet "Teflon" in Gaskets and Packing," write:

Source: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

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... THROUGH CHEMISTRY

ADVERTISEMENT

When inquiring check CP 7999 on handy form, pgs. 2-3



"I won't be in Today!"

Call a halt to absenteeism and slowdowns due to skin irritations. Use **TARBONIS CREAM**—recommended by industrial physicians everywhere! Clean and neat, easily applied on the job. Helps clear up difficult conditions and protects against recurrence... quickly relieves itching and irritation. **TARBONIS** is helping hundreds of plants keep workers on the job... why not yours?

THE TARBONIS COMPANY Dept. CP
4300 Euclid Avenue, Cleveland 3, Ohio

Please send free sample of **TARBONIS** and literature.

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CITY _____ ZONE _____ STATE _____

BY _____ DEPT. _____

When inquiring check CP 8000 on handy form, pgs. 2-3

MATERIALS

Gives safety measures for N₂O₄

Correct type of protective equipment to be worn when handling nitrogen tetroxide is an item of information in this 7-page bulletin. Maximum permissible concentrations of the gas are given as is the type of detecting equipment. In outlining the unloading and handling methods for nitrogen tetroxide, the bulletin gives ICC regulations covering containers and shipping procedure.

Also included is a description of the analytical method for determination of the gas, vapor pressure curves, drawings of approved containers and a list of references. The bulletin describes the physiological effects of exposure to nitrogen oxides and prescribed medical aid measures. "Safety Measures for Nitrogen Tetroxide" is issued by Product Development Dept., Solvay Process Division, Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York, N. Y. When inquiring specify CP 8001 on handy form, pages 2 and 3.

Blowing agent for rubber, plastics takes hot-milling...

high decomposition temperature eliminates danger of blow under 135°C

Uses: Blowing agent for producing rubber and plastic sponge products. Suitable with natural or synthetic rubbers, and especially recommended for vinyl plastic sponging. Rubber-and-plastic blends can be sponged with the agent.

Features: Because of its high decomposition temperature (135°C), it can be added to relatively hot stocks on a mill without danger of a premature blow.

Resulting vinyl sponge is unusually buoyant, weighs 6-8 lb/cu ft, is flameproof, and ranges from a rigid to a soft structure. Non-toxicity is indicated in tests.

Sponged rubber has a fine, uniform cell structure of either the open pore or closed pore type; it is non-staining, non-discoloring, and odorless.

Description: Celogen, chemically, is p, p'-oxybis (benzene sulfonyl hydrazide). It is a stable white powder at normal temperatures, but decomposes above 135°C with the liberation of nitrogen gas.

(Available in commercial quantities from the Naugatuck Chemical Division of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 8002 on handy form, pages 2 and 3.)

Two water-soluble resins act as stabilizers, thickeners, protective colloids...

adhesive, suspending, emulsifying, and film-forming characteristics also of value

Uses: Recommended primarily as stabilizers, protective colloids, and thickeners for natural, synthetic rubber and resin latices. They possess adhesive, suspending, emulsifying, and film-forming characteristics which suggest other applications.

Specific fields of application are: water-based latex paints, adhesives, pigment and clay binders, protective colloids and thickening agents.

Features: Outstanding properties of these water-soluble resins include: non-creaming when used as

LITHIUM has arrived...

Metalloy Supplies Lithium In These Forms:

LITHIUM METAL

Cup 1/5 lb.
Shot 4-8 mesh
Extruded Rod .. 1/2" & 3/8" Dia.
Wire 1/8" Dia.
Ribbon 1/4"
Cartridge (Encased in Copper Tubing) 2.25, 4.50, 9.0 & 108.0 Gram

LITHIUM HYDRIDE

Fine Ground
Supplied experimentally or commercially . . .

LITHIUM

• Bromide • Carbonate • Chloride • Fluoride • Nitrate • Hydroxide Monohydrate

and **METALLOY** is **BASIC** to this **FAST-GROWING INDUSTRY!**

LET Metalloy and Lithium go to work for you today.

WRITE Dept. CP for Data Sheets on any products listed. No obligation.

IF IT'S LITHIUM — IT'S METALLOY



When inquiring check CP 8003 on handy form, pgs. 2-3

Can CARBON DIOXIDE solve one of your processing problems?

Each year industry is finding more applications for carbon dioxide. Some of these involve its use as an inert gas in processing paints, lacquers, resins, plastics, drugs and foods—it's the same gas that puts the "life" in soft drinks and is "death" to fires. Used in solid form ("DRY-ICE") carbon dioxide makes an ideal in-transit refrigerant as well as a cooling agent for shrink fitting and other industrial applications.

For the user of carbon dioxide, Pure Carbonic has developed the Carboxiflex CO₂ Supply System which insures a gas supply in any required quantity.

A handy directory listing the points that make up the nation-wide Pure Carbonic distribution network is available. If you would like a copy, or, if you desire the help of a Technical Sales Service man in the solution of a problem involving the use of carbon dioxide, please write to Dept. CP1859 at the address below.

PURE CARBONIC COMPANY

A Division of Air Reduction Company, Incorporated

GENERAL OFFICES: 60 EAST 42nd STREET, NEW YORK 17, N. Y.
Nation-wide CO₂ Service—Distributing Stations in Principal Cities

When inquiring check CP 8004 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

thickener for latices; flexible, tough, and elastic as a film-former; will not yellow, embrittle, or oxidize because of full saturation; stable at alkaline and mildly acid pH's; and will not rot, mildew, or sour (due to derivation from synthetic materials).

Description: Polyco 296BT and Polyco 296N acrylic thickeners (anionic colloids) are aqueous solutions of sodium polyacrylate. They are furnished as straw-colored, homogeneous solutions containing 15% solids. Polyco 296BT is a high-viscosity grade, and Polyco 296N is a medium-viscosity grade.

(Products of the American Polymer Corporation, Dept. CP, Peabody, Mass. . . . or for more information check CP 8005 on handy form, pages 2 and 3.)

Closely simulates properties of carnauba wax . . .

melting point and viscosity similar; gloss is higher

Uses: Recommended for manufacture of single-use, throw-away duplicating papers and regular multi-use carbon papers. Also being used in formulation of other wax-containing products such as solvent polishes, etc.

Features: A domestic wax that is remarkably similar to imported carnauba wax in physical and chemical characteristics. In standard wax-oil mixes, it registers a melting point and viscosity index which compare quite closely with those of carnauba. Gloss readings of wax mixes are considerably higher than those for carnauba mixes, indicating use in self-polishing formulations. Said to be free of all resins, natural or synthetic, and contains neither plastics nor cellulose.

Description: Parwax has the following specifications:

Melting point, °C	93/95
Penetration, 100/77-5	3 1/2
Acid value	12
Saponification value	61
Ash content	None

Parwax and carnauba wax are compared in the table below:

Percentage of Mix		Gloss*		Melting Point, °F		Viscosity**, sec	
%Wax	%Oil	Car-nauba	Par-wax	Car-nauba	Par-wax	Car-nauba	Par-wax
15	85	7	20	159.5	151	51.3	52.6
20	80	14	22	160	151.5	59.4	56.8
25	75	27	86	161	161.5	62.6	61.7
30	70	35	70	162	163	65.3	65.7

*Test is based upon surface gloss of the solid cold mix of wax and oil and would be indicative of the surface gloss of a sheet of carbon paper. Gloss is obtained from an unbuffed surface.

**Viscosities of the wax and oil mixture are almost identical to those of carnauba wax, assuring equivalent flow properties. Tests were made on standard viscometer and represent readings in seconds.

(Development of the Concord Chemical Company, Dept. CP, Moorestown, N. J. . . . or for more information check CP 8006 on handy form, pages 2 and 3.)

Effects water repellency on masonry

Two-page sheet, replete with pictures of test results, explains this silicone base liquid which seals moisture out of exterior masonry walls. It is transparent, colorless, and one coat reputedly keeps water out for many years. Bulletin describes how product penetrates into surface and silicone coats the pore walls. Application methods are given in detail. Bulletin 117-11 is issued by The Monroe Co., Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio. When inquiring specify CP 8007 on handy form, pages 2 and 3.

DECEMBER, 1951

Can You Use A DETERGENT that

THICKENS

Aqueous solutions exhibit high viscosity without use of additives.

FOAMS

copiously . . . providing highly stable small bubbles.

CLEANS

both hard surfaces and textiles.

EMULSIFIES

most common oils.

RINSES

easily with good drainage on dishes and glassware.

then you should investigate

OUR NEW . . . NON-IONIC ONYXOL 336

COMBINING HIGH VISCOSITY, FOAMING,
WETTING AND DISPERSING ACTION

SUGGESTED FOR: Use in industrial cleaning compounds . . . shampoos of all kinds . . . bubble bath preparations . . . cosmetics . . . buffing and polishing compounds . . . wettable sulfur . . . polishes . . . pigments . . . foam fire-fighting solutions . . . ore flotation solutions . . . household liquid detergents for dishes and laundry.

onyx

**ONYX OIL & CHEMICAL COMPANY
INDUSTRIAL DIVISION**

184 WARREN ST., JERSEY CITY 2, N. J.

CHICAGO • BOSTON • CHARLOTTE • ATLANTA

In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que. For Export: Onyx International, Jersey City 2, N. J.
West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

When inquiring check CP 8008 on handy form, pgs. 2-3

MATERIALS

Limestone deposits in areas served by B&O RR

As a service to its customers and the regions its rails serve, the B&O RR offers "High-calcium Limestones in the B&O Area". It presents a concise report on limestone deposits in eight states — Ill., Ind., Md., N.Y., O., Pa., Va., and W.Va. — expressly for technical and executive personnel. Geology of limestone, a glossary, bibliography, comments on products, and uses of limestone are included in entirety of 105 pages. Issued by the Traffic Dept. of the Baltimore and Ohio Railroad Co., Dept. CP, Baltimore 1, Md.

Develops electrode for welding cast iron . . .

machinable bead deposits are free of porosity and slag inclusion even on old surfaces

Uses: Yields high-strength welds in all types of cast iron welding. Machine bases, gears, cams, motor or generator housings that have cracked can be restored to useful service by means of the electrode.

Features: Steady non-spatter arc gives deposits that are free of porosity or slag inclusion even when welding old, dirty, or greasy castings. Joints are said to have higher tensile strength than base metal itself.

Description: EutecTrod 26 is an all-position, AC or DC welding electrode. Weld deposit closely matches cast iron in color and can be annealed to full machinability. Tensile strength is up to 65,000 psi and Brinell hardness is 150-200 annealed. Available in 1/8" size; recommended amperage is 60-120 amp.

Entire weld area should have all dirt, scale, grease, and oxides removed. Cracks in cast iron should be chipped out and the ends drilled to prevent weld cracks and fissures. Lowest possible amperages are recommended.

Skip-weld should be used on long cracks to avoid high heats in local areas. Short 2" beads are best. If full machinability is desired in weld and weld zone, post-annealing is necessary.

(EutecTrod 26 for cast iron is a development of the Eutectic Welding Alloys Corp., Dept. CP, 40-40 172 St., New York, N. Y. . . or for more information check CP 8009 on handy form, pages 2 and 3.)

Helps prevent scorching in mixing, milling and extruding of cold GR-S . . .

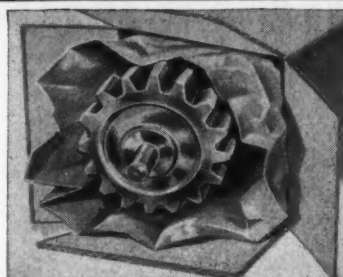
petroleum-base, rubber-process aid is recommended for dark-colored rubber stocks

Uses: In the processing of low-temperature GR-S rubbers (ingredients polymerized at 41°F).

Features: Sundex 41, when properly applied in the production of stocks from cold GR-S: (1) reduces power consumption in processing, and (2) contributes to improved wear resistance and flex life of cured products.

Description: A 100% petroleum-base process aid, Sundex 41 helps to prevent scorching during mixing, milling and extruding of cold GR-S rubbers. It also aids in the dispersion of compounding ingredients.

Sundex 41 is especially useful in the production of tread stocks and similar rubber rompounds. It is free-flowing at any temperature likely to be encountered; this makes it easy to add accurately measured quantities. No de-



MONSANTO DICYCLOHEXYLAMINE MAKES RUST-PREVENTING PAPER POSSIBLE

Manufacturers of ferrous metal parts are saving time and money by packing their products with a new paper that prevents rust. The paper is coated by a patented process that employs dicyclohexylamine, phosphoric acid 75% and other materials. Monsanto is the only American manufacturer of dicyclohexylamine.

Use of the chemically treated paper makes it unnecessary to slush parts with grease. Packing does not need to be tight enough to seal out moisture and other corrosion factors.

As much as 60% of packaging time is saved. Shipping costs are lowered because lighter containers can be used. Parts reach their destinations ready for use, saving time formerly used for cleaning. Flammable solvents used to clean ordinary rust preventatives from metal parts are no longer needed, thus eliminating a dangerous fire hazard.

The new packaging method, currently being used for products ranging from watch parts to automotive parts, gives positive protection as long as the inhibiting chemical is present in the package. Protection for at least five years has been observed in outdoor exposure.

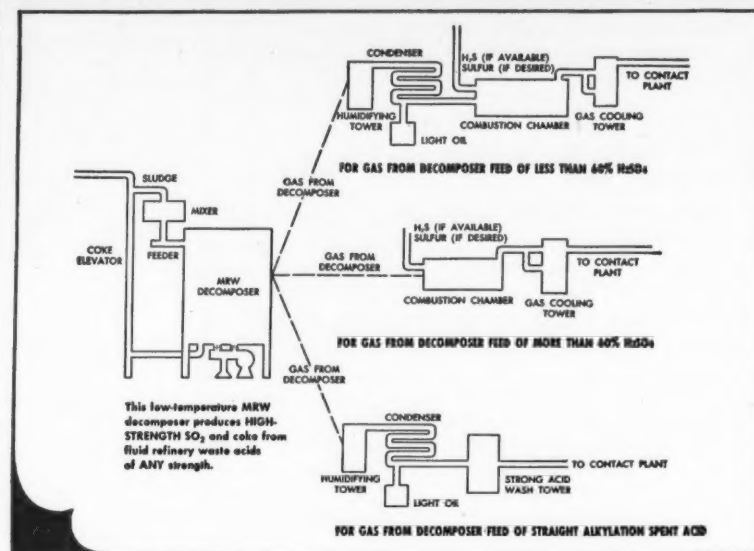
The protection is effective in climates from the Arctic to the tropics . . . even in salt air. It has been thoroughly tested by a number of leading manufacturers.

If you manufacture equipment employing ferrous metals, this new paper can perform a valuable service for you. We will be glad to give you names of manufacturers of this new packaging material. Just check the coupon and mail it to us and we will reply promptly.

FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be useful to you. This issue discusses:

Special Chemicals Corrosion Inhibitor
Sludge Recovery Units Insecticide
Viscosity Index Improver Germicide and Fungicide
Additional information will be furnished on request.



HOW TO MAKE WHITE SULFURIC ACID FROM REFINERY SLUDGE

Clean, white sulfuric acid, of any desired strength, can be made from oil refinery sludge or H_2S —or both together—with a Monsanto-Ross-Wilde sludge recovery unit. (Various operations of the unit are diagrammed above.) The Monsanto-Ross-Wilde unit may operate with existing contact sulfuric acid plants, or Monsanto will design sludge recovery and sulfuric acid units as a single project.

In addition to sulfuric acid, these units recover oil from some types of sludge. The recovered oil can be refined into salable products.

Refineries can improve their community relations by eliminating stream and atmospheric pollution. Urgently needed tank cars, now used to carry away sludge and to return reclaimed acid, will be available for other purposes once the Monsanto-Ross-Wilde sludge recovery unit is in operation.

Because of the present sulfur shortage and the growing use of sulfuric acid, a Monsanto-Ross-Wilde sludge recovery unit should be a sound investment for the present and future.

If you have a refinery sludge problem, mail the coupon for a booklet on the Monsanto-Ross-Wilde process.

SANTODEX GIVES VISCOSITY INDEX OF 140 OR HIGHER

Expanded production of Santodex,* Monsanto's viscosity index improver, makes the product available in greater quantities to users and obtainable to many we could not serve in the past.

Developed primarily for improving the viscosity index of motor oils, Monsanto Santodex makes possible indices of 140 or more.

Santodex is an economical viscosity index improver that offers the following advantages:

1. Improves ease of engine starting at low temperatures.
2. Reduces engine oil consumption.
3. Improves piston ring seal.
4. Reduces number of viscosity grades of motor oils necessary to meet field requirements.
5. Provides more effective use of lighter viscosity lubricating oil stocks.
6. Meets specifications containing high viscosity index requirements.

Mail the coupon for a free copy of Monsanto Technical Bulletin No. O-48, "Santodex, Viscosity Index Improver." The publication contains 12 pages of valuable information.



Research Chemists' Corner

You may find something new here

You may find opportunities for new product development and improvement of your present products in these five special Monsanto Chemicals. Look over their properties and, if you see research possibilities in them, mail the coupon or contact

PHENYLACETONITRILE

STRUCTURAL FORMULA:



APPEARANCE: Clear water-white liquid
 ASSAY: 97.0% Min.
 CRYSTALLIZING POINT: Minus 23.0° C. Min.
 BOILING RANGE:
 First drop 232.0° C. Min.
 1-96 cc. 3.0° C. Max.
 100% 6.0° C. Max.
 Dry point 238.0° C. Max.

PHENYLACETAMIDE

STRUCTURAL FORMULA:



APPEARANCE: Fine white crystals
 ASSAY: 98.5% Min.
 MELTING POINT: 158.0 C. Min. to start
 ODOR: Characteristic

Beta-PHENYLETHYLAMINE

STRUCTURAL FORMULA:



APPEARANCE: Colorless to slightly yellow liquid
 MELTING POINT ASSAY: 99.0% Min.
 SP. GR.: at 15°/15° C. 0.963-0.967

the nearest Monsanto Sales Office for samples. Samples of any or all of them will be sent to qualified chemists without cost or obligation. If you find uses for them you can count on these chemicals to be available in commercial quantities.

POTASSIUM PHENYLACETATE

(64% SOLUTION)

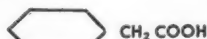
STRUCTURAL FORMULA:



APPEARANCE: Colorless to slightly yellow liquid
 ASSAY: 64% Min.
 pH: 7.0 Min. 8.0 Max.
 HEAVY METALS: 30 ppm Max.
 REFRACTIVE: Refractive index at 25° C. 1.4750-1.4820
 ODOR: Characteristic

PHENYLACETIC ACID

STRUCTURAL FORMULA:



APPEARANCE: White crystals
 ASSAY: 99.0% Min.
 ODOR: Characteristic
 MOISTURE (H₂O): 0.50% Max.
 MELTING POINT: 76.0° C. Min.

SANTOPHEN 1 KILLS GERMS AND STOPS FUNGI

Monsanto Santophen* 1 (ortho-Benzylpara-chlorophenol, technical) is a versatile germicide, toxic to both bacteria and fungi.

Santophen 1 is used extensively in liquid soaps and cleaners . . . in rug shampoos . . . in surgical soaps . . . in cleaners for rest-

rooms and locker rooms . . . in formulations for use in hospitals on floors, walls, linens and surgical instruments.

For further information on Santophen 1, mail the coupon for a copy of Monsanto Technical Bulletin No. O-51, "Santophen 1 for use in disinfectants."



DDT CONTINUES TO SCORE VICTORIES

DDT has been victorious in fighting insects in two widely separated fields. Both are extensive operations against pests which have been problems for years.

Spruce budworm, attacking forests in the Pacific Northwest, has been sprayed with DDT in one of the biggest projects of its kind in America. Spraying from the air, pest fighters have covered around 2,141,000 acres of timber.

Malaria-carrying mosquitoes have been controlled by the use of DDT in homes and in outdoor toilets. New infestation due to floods and, in some measure, to the return of military personnel carrying the disease, has made increased vigilance necessary.

A pest-control program recently announced, using DDT and other insecticides, saved \$24,000,000 for the Army. The entire cost of the program, including personnel, equipment and insecticides, was only \$1,300,000.

For information on DDT and its uses, contact the nearest Monsanto Sales Office or mail the coupon for literature.

MONSANTO CHEMICAL COMPANY, 1700 S. Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U. S. Pat. Off.



SERVING INDUSTRY . . . WHICH SERVES MANKIND

MATERIALS

tectable bad effects have been observed on finished products.

Because of its dark color, Sundex 41 works well with dark-colored stocks.

(A product of Sun Oil Co., Dept. CP, 1608 Walnut St., Philadelphia 3, Pa. . . or for more information check CP 8011 on handy form, pages 2 and 3.)

Mixes with cement to seal masonry surfaces against water penetration . . .

improved additive can be forced into crack or opening even against hydrostatic pressure

Uses: Liquid chemical to be mixed with cement or cement-and-sand, and the mixture applied to masonry or plaster surfaces to seal-off passage of moisture. Recommended for coating walls above or below ground or water level.

Features: Flextite liquid now contains a new stabilizing ingredient that speeds up action in sealing-off leaks, water seepage in concrete walls. In addition, quicker action and more thorough bonding is provided.

Description: Flextite yields a mortar that is easily handled, fast-setting, and can be forced into an opening even against hydrostatic pressure.

(Development of the Flexrock Company, Dept. CP, Filbert & Cuthbert West of 36th, Philadelphia 4, Pa. . . or for more information check CP 8012 on handy form, pages 2 and 3.)

Announce two sizes for cotton warp yarns . . .

improve weaving, decrease shedding; easily removed during desizing, easily formulated to weave

Uses: Used in conjunction with starch for sizing cotton warp yarns. Glyozole is a 100% active liquid that serves primarily as a starch plasticizer; Glyotal is a 100% active solid that serves as a softener for starch size.

Features: Products have shown good performance in weaving efficiency, decreased shedding, ease in removal of size in desizing operations, and ease in the adaption of a formula for a given weave.

Description: Both Glyozole and Glyotal may be used with or without a starch homogenizer. Products have been tested in the laboratory as well as in a large sheeting mill in the South for a period of two years.

(Development of Zimmerman Associates, Dept. CP, Box 248, Guilford College, North Carolina . . . or for more information check CP 8013 on handy form, pages 2 and 3.)

Compiles principal chemical products

Twelve-page bulletin is a compilation of the principal products of five of this company's divisions. Sections are devoted to coal chemicals, plasticizers, activated carbons, protective coatings, and agricultural chemicals. Outstanding applications and specifications of products are given where possible. "Pittsburgh Chemicals" is issued by the Pittsburgh Coke & Chemical Co., Dept. CP, Grant Bldg., Pittsburgh 19, Pa. When inquiring specify CP 8014 on handy form, pages 2 and 3.

SEND INFORMATION:

- ☐ Dicyclohexylamine.
☐ Makers of rust-preventing paper.

SEND LITERATURE:

- ☐ Monsanto-Ross-Wilde process.
☐ Bulletin O-51 (Santophen 1).
☐ Bulletin O-48 (Santodex). ☐ DDT.

SEND SAMPLES:

- ☐ Phenylacetone. ☐ Phenylacetamide.
☐ beta-Phenylethylamine.
☐ Potassium Phenylacetate.
☐ Phenylacetic Acid.

MONSANTO CHEMICAL COMPANY

1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, samples or literature as indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

When inquiring check CP 8010 on handy form, pgs. 2-3

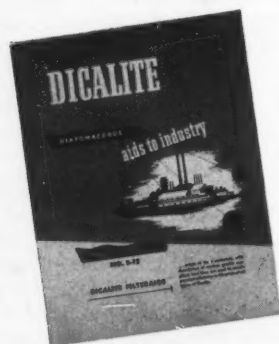
**Here's what
we meant by**



**A survey by a Dicalite Engineer enabled
this manufacturer to cut filteraid usage
by 66 $\frac{2}{3}$ % per gallon of throughput**

One of the many products in this manufacturer's line is varnish. It was being filtered by precoat only, using 100 lbs. of filteraid to deposit on the cloths of a 200-sq. ft. plate and frame press before starting to filter each 1000-gal. batch. A survey by a Dicalite engineer led to saving both time and filteraid. First, a switch was made to a higher-flowing grade of Dicalite filteraid. Only 25 lbs. of this material (Dicalite 4200) was used for the precoat, but 75 lbs. were used in continuous addition to the varnish as it was being filtered. In this way 3,000 gallons were filtered with satisfactory clarity before the press needed cleaning. **RESULT:** 1) 100 lbs. of Dicalite filtered 3,000 gallons instead of the 1,000 gallons put through by the former method; 2) cycle length was tripled, so that two press cleanings were eliminated in filtering 3,000 gallons and saved considerable down time and overtime. Such spectacular savings are not always possible, but our engineers find many cases where filteraid consumption could be reduced 10% to 15% without any ill effects to operation or product quality. If you feel that a check of your filtration operation or stretching your available supply of filteraid will be helpful, or if you have a current filtration problem, write our nearest office. A Dicalite engineer will gladly call at your convenience.

Send for
free copy of
Bulletin B-12



DICALITE® FILTERAIDS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION



NEW YORK 17, N. Y. • CHICAGO 1, ILL. • LOS ANGELES 17, CALIF.

When inquiring check CP 8015 on handy form, pgs. 2-3

MATERIALS

**Lists properties and uses of 65
brass and copper alloys**

Four-page folder lists 65 of the manufacturer's brass and copper alloys, along with their composition, properties, forms and typical uses. Following are some of the properties on which data are reported: tensile strength, psi; hot working range, °F; density, lb per cu in; and, Rockwell hardness. "Bridgeport Alloys, Properties and Uses" is issued by Bridgeport Brass Co., Dept. CP, 30 Grand St., Bridgeport 2, Conn. When inquiring specify CP 8016 on handy form, pages 2 and 3.

**Up to 40% faster cure
attained with
phenolic . . .**

compound suitable for compression, transfer, plunger type molding of large or small parts

Uses: Molding material recommended for those applications where general-purpose phenolic materials are being used at present. Suitable for compression, transfer, and plunger type molding.

Features: Fast-cure phenolic compound. Some unusually large savings in cure time have been reported — meter cases 20%, radio cabinets 16%, tube sockets 25%, iron handles 34%, and tube bases 40%.

Description: G-E 12853 is capable of being preheated to higher temperatures than conventional general-purpose phenolics, thus cure time is substantially reduced. In many cases it is reported to aid molding of intricate parts. Preheating and mold temperatures can be varied widely to regulate flow, it is reported.

Combining good physical and electrical properties, G-E 12853 imparts good finish and high gloss to molded parts. Preforming characteristics are excellent and common methods of finishing may be utilized. Compound is produced only in black.

(Development of the Chemical Division of the General Electric Company, Dept. CP, Pittsfield, Mass. . . . or for more information check CP 8017 on handy form, pages 2 and 3.)

**Resistance to hydrocarbons
outstanding feature of
plasticizer . . .**

recommended for application in compositions that must withstand gasoline, greases, related products

Uses: For plasticizing cellulose (cellulose acetate and nitrate formulations), polyvinyl acetates (adhesives for bonding rubber to metal and for book binding and shoe making), polyamides (nylon and adhesives), shellac, proteins, etc.

Features: Because it is practically insoluble in hydrocarbons, it is an advantageous plasticizer in compositions made to withstand gasoline, greases, and related products.

Description: Santicizer 8 is a mixture of N-ethyl ortho and para toluene sulfonamides. It imparts flexibility, good strength, brilliance and polish, water and scuff resistance, and heat and light stability to cellulose.

It imparts good adhesion and flexibility to polyvinyl acetate adhesives. Santicizer 8 is reported to be one of the best plasticizers known for nylon and related polyamides. Here, it aids in processing by lowering the melting point, and in addition improves toughness and flexibility (especially low-temperature flex) without adversely affecting other properties. Compatibility with

MATERIALS

polyamide suspensions is outstanding. It imparts flexibility without brittleness or friability.

The plasticizer increases the flexibility of shellac and has a definite softening action — yet does not impair its adhesion.

With protein materials, it improves flexibility, water resistance, gloss, and adhesion. In zein label varnishes, it prevents curling.

(Development of the Organic Chemicals Division of the Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. . . . or for more information check CP 8018 on handy form, pages 2 and 3.)

High solubility, lasting foam are credited to promoted synthetic detergent. . .

high as 70% improvement noticed in cotton detergency

Uses: Detergent for preparing general household cleaners, hand dishwashing compounds, laundry formulations, building maintenance cleaners, etc.

Features: A promoted synthetic detergent — contains a detergency promoter (sodium carboxymethylcellulose) as an integral component of every flake of the synthetic detergent base (an alkylarylsulfonate). Excellent solubility is reported. Said to overcome the dissolution difficulties experienced with sodium CMC alone. Sudsing characteristics of this detergent are excellent and foam is highly stable.

Especially outstanding in cotton detergency — as much as 20-70% improvement is reported.

Description: Kreelon CD is a combination of 95% Kreelon 4D (38% alkylarylsulfonate) and 5% Carbose D (3.2% sodium carboxymethylcellulose). Physical properties of Kreelon CD are set forth below:

Physical form	Flake
Color	White to light cream
Packed density	26-29 lb/cu ft
pH 1% distilled H ₂ O solution	8.9 at 25°C
Moisture	1.2%

(Development of the Wyandotte Chemicals Corporation, Dept. CP, Wyandotte, Mich. . . . or for more information check CP 8019 on handy form, pages 2 and 3.)

Treatise on adhesives links theory to practice

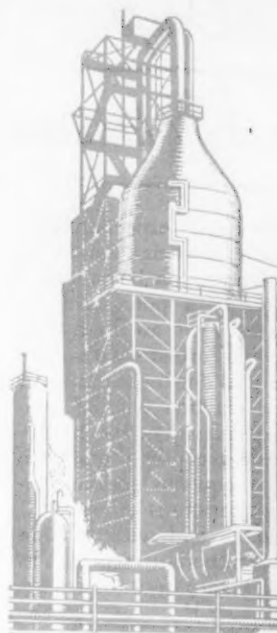
Edited by N. A. de Bruyne of Aero Research, Ltd., Duxford, England and R. Houwink of Rubber-Stichting, Delft, Netherlands, this 518-page book represents a compilation of material garnered from contributors both in this country and abroad. The book examines the theoretical bases of adhesion, describes technological methods and indicates the solution of practical problems.

Contents treat of such topics as organic, inorganic, vegetable, rubbery and synthetic resin adhesives; organic and inorganic cements; the rheology of adhesives; general conditions for wetting and for adhesion; and, the physical testing of adhesion and adhesives. There are 205 illustrations, 950 references, and author and subject indices.

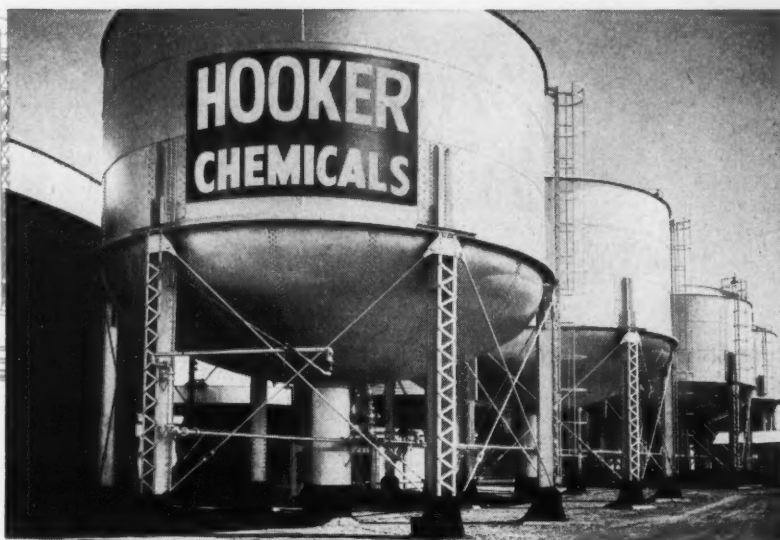
To obtain "Adhesion and Adhesives", remit \$10 direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring specify CP 8020 on handy form, pages 2 and 3.

DECEMBER, 1951

Petroleum Refiners, too specify HOOKER



HOOKER CAUSTIC SODA distributing station at Wilmington, Calif., serves refiners in the area.



HOOKER CHEMICALS USED BY THE OIL INDUSTRY

Caustic Soda	Aluminum Chloride
Chlorine	Antimony Trichloride
Muriatic Acid	Sulfur Chlorides

Refiners use *Hooker Caustic Soda* for sweetening base stocks, and for neutralizing chemical wastes. They specify *Hooker Chlorine* for water treatment. *Hooker Muriatic Acid* is used for treating wells to improve production.

The other Hooker Chemicals listed above find wide use as catalysts in isomerization, polymerization, and treatment of hydrocarbon oils.

DELIVERIES

—Most of the Hooker Chemicals listed here are available now; some in limited quantities. Others will be available in the near future. Your Hooker sales representative will be glad to keep you posted on the current delivery situation.

Why Hooker is a good supply source for Your Industry

Hooker offers you:

- a selection of nearly 100 industrial chemicals
- exceptional purity that reduces processing headaches
- uniformity assured through rigid control methods
- shipments carefully checked to arrive in good order, on schedule
- convenient location, with plants serving the industrial East and West
- willing technical help on problems of supply
- experience as a supplier to 30 different industries

Write today, on your business letterhead, for General Products List 100, and for Technical Data Sheets on Hooker Chemicals of particular interest to you.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

SODIUM SULFIDE • SODIUM SULFHYDRATE • BENZAL CHLORIDE • BENZOIC ACID • BUTYRYL CHLORIDE • LAURYL CHLORIDE • SULFURYL CHLORIDE

When inquiring check CP 8021 on handy form, pgs. 2-3



1-1430

Jefferson

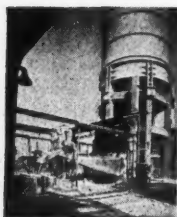
Diethylene Glycol

Excellent Quality for Many End Uses . . .

tobacco humectant
manufacture of resins
manufacture of plasticizers
printing inks
dehydrating agent for natural gas
textile softener
dyestuff solvent

Available East and West in Convenient Lots . . .

from Port Neches, Texas, or Union, N. J.,
in tank cars or 55 gallon drums.



Quicklime silo and lime slakers in ethylene oxide and glycol unit at Jefferson's Neches plant.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.



ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Carbamate esters—especially suitable for use as plasticizers and high boiling solvents—can be prepared by reaction of a polyglycol bis haloformate, such as diethylene glycol dichloroformate, with a secondary amine. The temperature at which the reaction can be conducted depends upon the hydrogen chloride acceptor used. With pyridine or aqueous sodium hydroxide, temperatures below 25°C. are preferable and with calcium carbonate, temperatures as high as 50° to 100°C. are desirable.

Molded brake linings can be manufactured by use of a mixture containing a resin plasticized with a hygroscopic material, such as diethylene glycol. Approximately 1.4 weight per cent of the total mix must be plasticizer. These mixtures can be compressed at normal temperatures to the desired final form and curing accomplished by passing through a suitable oven without the application of pressure.

Purification and dehydration of natural and refinery gases can be effected simultaneously through the use of combination absorbents, such as monoethanolamine and diethylene glycol. Important improvements over prior processes have been achieved by the addition of low cost organic diluents to reduce substantially the solution viscosities. This results in more efficient contact of the absorbent with the gas and therefore reduces plant costs.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Diethylene Glycol in your products or processes.

MATERIALS

Dynel-wool filter bags last 5 times longer than pure wool bags . . .

stand up to most severe smelting operations, look good for many liquid filtrations

Uses: Fabric is finding success for dust collection in various smelting operations where acid conditions are prevalent and where temperatures range to 300°F. Presently under test for various types of fluid filtration where wool is being used — sewage filtration, dewatering processes, etc.

Features: Under the most severe conditions of secondary smelting, service life of the fabric has exceeded that for wool by 4 or 5 times. In all cases, equipment may be operated in excess of the dew point by using bags made from the fabric.

In liquid filtration, life of the fabric is expected to exceed that of either wool or cotton due to its higher comparative alkali and acid resistance.

Description: FumeAll filter fabric is a combination of dynel synthetic fiber and virgin wool presently offered in four styles: 1) 415-F is a smooth finished fabric which will shake very easily; 2) 415-N is napped and in some installations it lengthens the time between clearings; 3) 1333-S is a standard dust collection fabric which is used by most secondary smelters; 4) 1333-N is napped and is also used by secondary smelters.

Numbers 509, 513, and 5333 are experimental fabrics. Number 5333 is a tight-weave fabric that eliminates a great deal of dusting and can be fabricated into bags with 18 and 22" diameter having woven seams.

(Custom weaves and special fabrications of FumeAll fabric are made by Portland Woolen Mills, Inc., Dept. CP, Portland 3, Ore. . . or for more information check CP 8023 on handy form, pages 2 and 3.)

Use low-tin solders for soldering black iron . . .

flux has strong scavenging action on low-tin solders; buffered to neutralize corrosive reaction

Uses: Soldering flux for monel, steel, black iron, copper, brass, bronze, etc.

Features: Flux is buffered to reduce corrosive reaction. This buffering neutralizes the corrosive element in the flux upon which the soldering action is dependent without destroying its effectiveness as the soldering agent. Tests show that there is less corrosive reaction when used at full strength than there is with conventional fluxes.

Gives maximum action in removing surface oxides. Has a powerful scavenging action on low-tin solders that is needed where tin content has been reduced.

Description: Lytestone flux lowers surface tension of molten solder, thus increasing fluidity and improving spreading of low-tin solders. It does not oxidize under heat needed for working low-tin solders, thereby reducing flux residue. Small amount of residue that remains is readily soluble in water and washed away. Lytestone can be carried on top of metal bath for dip soldering.

(Development of the Farrelloy Company, Dept. CP, 1260 North 26th St., Philadelphia 21, Pa. . . or for more information check CP 8024 on handy form, pages 2 and 3.)

When inquiring check CP 8022 on handy form, pgs. 2-3

MATERIALS

Announces dye concentrate for spray, brush coloring of acetates . . .

does not add thickness to sheeting

Uses: Dye for spray or brush coloring of virgin cellulose acetate plastics. *Not* recommended for reclaimed acetate sheeting (particularly stock coated with gelatin), flexible vinyl sheeting, or nitrocellulose.

Features: A dye and not a coating material — it will not add thickness to the plastic sheet. Very little build-up when spraying through masks or stencils; quick rinse in acetone or alcohol will clean masks. Formulated with dyes that present no toxic hazard.

Description: Air-Brush Conc. is a saturated solution of dyestuffs. It is adjusted to a medium rate of dry-in for brush or spray application. A Paasche air-brush fitted with a size "1" tip and connected with a 40 psi air supply can be used for applying. Air-brush is held about 8" from the acetate sheet and a single sweeping motion used.

A special thinner is available for reducing the color concentration.

(Product of the Schwartz Chemical Co., Inc., Dept. CP, 326-328 West 70th St., New York 23, N. Y. . . or for more information check CP 8025 on handy form, pages 2 and 3.)

Non-staining properties feature antioxidant for rubber . . .

chemically, the product is a mixture of styrenated phenols

Uses: Antioxidant for GR-S and natural rubber.

Features: Non-staining properties which should make it especially useful in the protection of such rubber articles as white side wall tires, refrigerator gaskets and electrical wiring insulation.

Description: Known as Styphen I, chemically, a mixture of styrenated phenols, it is being made available in commercial quantities. Storageability and protection against surface crusting (resinification) are improved with the addition of 1.25% Styphen I.

(Styphen I is a development of The Dow Chemical Co., Dept. CP, Midland, Mich. . . or for more information check CP 8026 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 8027 . . . see information request blank between pages 2-3.



WITCO CHEMICAL COMPANY • 295 MADISON AVENUE, NEW YORK 17, N. Y.

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season's
greetings
and
best wishes
for the
new year*



Shortly before Christmas in 1867, Gustavus, Edward and Otto Mallinckrodt, after long and careful planning, established a chemical works on the family farm in St. Louis. Its start was not overly auspicious, in the face of such exciting local events as the building of the *great Eads Bridge*, the launching, by George Francis Train and Elizabeth Cady Stanton, of the *women's suffrage movement* in St. Louis; the organization of the *mounted police force*; the burning of the lavish *Lindell Hotel*; the thrilling appearance of *Edward Payson Weston*, noted pedestrian, who gave an exhibition of his talents in the old Mercantile Library Hall after completing a walking tour of 1,316 miles from Portland, Maine, to Chicago; the performances of *Lotti's German Opera*; and the excitement of the country over the report that soldiers, sent to take possession of *Alaska*, were in destitute condition.

Yet Christmas 1867 marked a significant start. And now, 84 years later, we are happy to wish the best of everything to our ever growing family of customers, suppliers and friends.

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MANUFACTURERS OF FINE CHEMICALS FOR
MEDICINAL, PHOTOGRAPHIC, ANALYTICAL AND INDUSTRIAL USES
• SINCE 1867 •

MATERIALS

Gaskets and 'O' rings of Kel-F and Teflon meet AN specs . . .

expected that gaskets will be useful from 500° F to sub-zero

Uses: Find particular application where gaskets and 'O' rings fail due to chemical action.

Features: Kel-F and Teflon materials offer unique corrosion resistant properties, and their expected range of use is from 500°F to sub-zero temperatures.

Description: The most common specifications to which these gaskets and rings conform dimensionally are. Army-Navy specifications 6227, 6230 and 6290. However, the fabrication process permits the delivery of gaskets of non-standard sizes. Their use in many installations will obviate those shutdowns resulting from gasket failure.

(Kel-F and Teflon gaskets and 'O' rings are manufactured by Plastic Coating, Inc., Dept. CP, 18 Keith Jeffries Ave., Cranford, N.J. . . or for more information check CP 8028 on handy form, pages 2 and 3.)

Increase adsorption of desiccant . . .

intended for packaging applications to prevent rust, mold

Uses: Desiccant for packaging applications to prevent mold, mildew, and rust of packaged items usually experienced during conditions of high humidity. Conforms to military packaging specification MIL-D-3464 which rates desiccants according to moisture pickup.

Features: Reported to pickup 20% more moisture from the air than former desiccant offered by this manufacturer. Should enable a savings in metallic barriers and other vitally needed packaging materials due to higher efficiency.

Description: Protek-Sorb 121 silica gel is a hard granular material that picks up moisture by the process of adsorption. Somewhat resembling sand, it presents a surface area of approximately 50,000 sq ft/cu in.

(Development of the Davison Chemical Corporation, Dept. CP, Baltimore 3, Md. . . or for more information check CP 8029 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 8030 . . . see information request blank between pages 2-3.

MATERIALS

Develops electrical insulation for temperatures up to 180°C . . .

uniform texture and thickness makes it possible to accurately predict winding dimensions

Uses: Class H electrical insulation (as defined by AIEE standards) for service at temperatures to 180°C. Used for both inter-layer and wire-wrapping insulation. Adaptable to wide range of electrical devices — air cooled, inert gas, and silicone filled transformers, etc.

Features: Has excellent mechanical strength and physical properties. It is uniform in both texture and thickness; thus, winding dimensions can be predicted accurately. It is flexible for easy handling during application and is resistant to cracking or crazing.

Description: Quinterra Type 3 is an asbestos-base, silicone-treated, high-temperature electrical insulation. It is supplied in the form of sheets, rolls, and tapes. Widths can vary from 1/4 to 36"; thicknesses range from 3 to 9 mils.

Quinterra Type 3 maintains a dielectric strength of at least 350 VPM under continuous exposure to Class H maximum temperature of 180°C. Furthermore, this dielectric strength remains practically constant even under continuously high humidity. Good resistance to the following is reported: acids, alkalis, oils, fungus.

(Development of the Johns-Manville Sales Corporation, Dept. CP, 22 East 40th St., New York 16, N.Y. . . . or for more information check CP 8031 on handy form, pages 2 and 3.)

Announce commercial production of two monomers . . .

diallyl maleate and ethylene glycol dimethacrylate have variety of applications

Uses: Monomers for preparation of polyesters, cross-linking agents in copolymerization, resins, rubber chemicals, coatings, drying oils, pharmaceuticals, etc.

Features: First time in commercial production.

Description: Diallyl maleate and ethylene glycol dimethacrylate are the two monomers being announced. Former is uninhibited and may be used as received; latter is inhibited and should be purified for optimum results by adding 2% additional hydroquinone and distilling in a high vacuum. Purification of the latter may also be accomplished by a 5% caustic wash, after which the monomer is separated from the aqueous phase and then dried over anhydrous magnesium sulfate. Specifications are tabulated below:

PROPERTY	DIALLYL MALEATE	ETHYLENE GLYCOL DIMETHACRYLATE
Molecular weight	196.2	198.2
Physical form	Colorless liquid	Colorless liquid
Boiling point, °C	109-110 @ 3 mm	122-126 @ 15 mm
Density, 20 °C	1.077	—
Refractive index, 20 °C	1.4699	1.4558
Stabilizer	None	0.06% Hydroquinone

Specific toxicity data is not available for either of these compounds; it is therefore recommended that they be handled with care. Both show a tendency to gel on long standing and should be stored in a cool place.

(Products of the American Monomer Corporation, Dept. CP, Leominster, Mass. . . . or for more information check CP 8032 on handy form, pages 2 and 3.)

DECEMBER, 1951

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NTARA PRODUCTS, since October 1950 a division of General Dyestuff Corporation, this month changes its name to ANTARA CHEMICALS. The new name, it is believed, more accurately characterizes the general product line marketed by Antara—chemicals made by the General Aniline Works Division of General Aniline & Film Corporation for industry.

The change in name coincides with the inauguration of a multi-million dollar expansion program which will increase the research, production and service facilities of the division in the fields of surfactants, acetylene derivatives, intermediates and industrial chemicals.

For more complete information on any of the products in the broad categories listed at the left—or on the research, application and technical service facilities behind these products—please write on your company letterhead.



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IN CANADA: Chemical Developments of Canada Limited, Leaside, Toronto 17
Irwin Dyestuff Corporation Limited, Montreal 1

FOR THE FINEST AND FASTEST in Dyestuffs—it's INDANTHRENE...Ask For It!

When inquiring check CP 8033 on handy form, pgs. 2-3

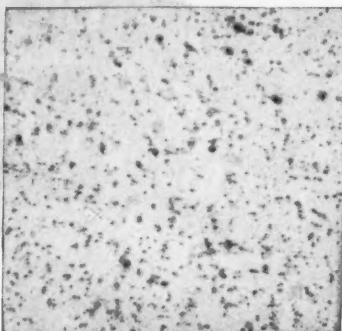
HERE'S PROOF OF THE COMPLETE EFFECTIVENESS OF MARASPERSE DISPERSANTS

Without Marasperse



These photomicrographs* show vividly how Marasperse disperses insoluble particles in water and overcomes their natural tendency to flocculate.

With Marasperse



(*Shown—Actual Photomicrographs of Carbon Black in Water—860 X)

This powerful dispersing action of Marasperse gives three important benefits.

1. The settling of insoluble particles in water suspension is prevented or greatly retarded.
2. The fluidity of slurries is markedly increased.
3. Slurries remain fluid even with greatly increased concentrations of solids.

If your process or the use of your products involves water suspensions of insoluble materials, investigate the use of Marasperse for increased process efficiency and superior product performance.

Marasperse is used in a wide variety of applications—in the dispersion of:

DYESTUFFS
INSECTICIDES
PIGMENTS
WAXES
ASPHALT
OIL WELL DRILLING MUDS
CARBON BLACK
STARCHES
GYPSUM
CLAYS
CEMENTS
RUBBER ANTIOXIDANTS
IN THE FORMULATION OF INDUSTRIAL CLEANERS

... and new uses are constantly being developed.

MATERIALS

Guide to manufacturer's coatings to meet specific problems

Four-page folder serves as a reference guide in determining the most suitable of the manufacturer's coatings in meeting certain requirements. Some problems for which products are specified include: rust prevention, chemical corrosion resistance, protection of concrete floors, resistance to high temperatures and the painting of wet walls and fresh plaster. "Penetrating Protective Paints" is issued by The Wilbur & Williams Co., Dept. CP, 130 Lincoln St., Boston 35, (Brighton) Mass. When inquiring specify CP 8035 on handy form, pages 2 and 3.

Easy to insulate odd surfaces with cement . . .

mineral wool composition good for temperatures to 1600°F; applied with trowel

Uses: Mineral wool insulating cement especially adaptable to large monolithic construction on furnace walls, stills, tanks, and boilers. Good for insulating odd or irregular shaped surfaces, grouped fittings, and process equipment.

Features: Easily applied with a trowel, and bonds well to cold or hot metal surfaces. Strength is high.

Description: MW-50 is recommended for insulating against temperatures ranging up to 1600°F.

(Five-pound sample bags of MW-50 are available from Philip Carey Mfg. Company, Dept. CP, Cincinnati 15, Ohio . . . or for more information check CP 8036 on handy form, pages 2 and 3.)

Apply cement to one surface in bonding vinyls . . .

water white bonding composition is equally effective on rigid and flexible plastics

Uses: Solvent-type bonding agent for cementing most of the commonly used vinyl plastics.

Features: Equally efficient when used on rigid vinyl sheets and molded sections or flexible vinyls. Requires only a 1-surface application; adhesion results in a few seconds and full strength of bond develops in about 30 min.

Description: Vinyl Cement is water white and is available in 2 grades — 'regular' and 'heavy'. Standard packaging is in quart and gallon cans, and in 55 gallon steel drums.

(Announcement of the Schwartz Chemical Co., Inc., Dept. CP, 326-328 West 70th St., New York 23, N.Y. . . . or for more information check CP 8037 on handy form, pages 2 and 3.)

One coat rubber-base paint is resistant to alkali, needs no sealer . . .

applied with roller, brush or spray, it can be thinned with turpentine, naphtha or mineral spirits

Uses: General purpose interior paint. It is especially recommended for wall covering.

Features: Paint is used as a one coat covering where alkali may be encountered. Appearance is good, especially where surface to be covered is partly sized, and

For protection against Air Damage—

USE

MAGNOLIA AIRCO NITROGEN for oxygen-free atmospheres

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and other processes requiring an inert atmosphere, use Magnolia Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion.

Magnolia Airco is one of the leading producers, purifiers and suppliers of nitrogen in the southwest.

To meet your requirements Magnolia Airco can supply nitrogen in 224 cu. ft. cylinders, or, if your plant is conveniently located and is equipped with an internal pipeline, delivery in bulk may be made in trailers. For further information address our nearest office.



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When inquiring check CP 8038 on handy form, pgs. 2-3

CHEMICAL PROCESSING



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Write for information on MARASPERSE products. You will receive complete and technical data. Our research staff will welcome the opportunity to cooperate with you.



When inquiring check CP 8034 on handy form, pgs. 2-3

MATERIALS

partly new or 'green'. In this case, a uniform color and texture is the unusual feature of the paint.

Description: While quick drying, this is not a water paint. Paratex is a dispersed rubber resin coating. Producing a color-uniform surface in one coat, it is self leveling and easy to brush or roll. When sprayed it should be thinned with mineral spirits to the proper consistency. Resistant to alkali, the paint will not show lime burn when applied over fresh plaster.

(Paratex is available in twelve colors from Truscon Laboratories, Dept. CP, 1700 Caniff Ave., Detroit 11, Mich. . . . or for more information check CP 8039 on handy form, pages 2 and 3.)

Strength of rubber-to-metal, rubber-to-ceramics bonds exceeds rubber strength . . .

primer for metal, ceramic surfaces is for bonding maker's silicone elastomers

Uses: Primer for metal or ceramic surfaces air-sets into a hard, tenacious film to which maker's silicone elastomers (either uncured or cured) bond when cured under heat and pressure. Aluminum, low carbon steel, high carbon steel, copper, glass, ceramic, tantalum, tin, silver, magnesium, or brass are among surfaces to which elastomers may be bonded.

Features: Strength of the bond that results exceeds that of rubber. Shear and tear resistance are high.

Description: G-E SS-67 primer (formerly designated as G-E 81267) is limited to use with maker's 400 Series silicone elastomers. When bonding uncured rubber stock to a surface, the surface must be thoroughly cleaned. Primer is then applied by dipping, painting, or spraying. Surface is then air-dried for 20 minutes, rinsed with water, and finally blotted dry. On tin plate, primed surface must be heated to 212°F before bonding. On magnesium, the primed surface should stand 30 minutes rather than the usual 20 minutes.

Freshened elastomers may be molded and bonded under pressure directly to these surfaces. Press cures usually are 20 minutes and autoclave cures 20-25 minutes at 260°F and under 40 psi. These cures may be followed by any oven cure to bring out the desired properties of the rubber.

If it is desired to bond cured rubber to primed surface, the surface must be solvent cleaned and roughened with emery paper.

(G-E SS-67 is a product of the General Electric Company, Chemical Department, Dept. CP, Pittsfield, Mass. . . . or for more information check CP 8040 on handy form, pages 2 and 3.)

Lesson in fighting sulfur fires gives special precautions

One-page bulletin points out that the sulfur fire hazard has increased by introduction of new methods of processing raw sulfur which emphasize smaller-sized sulfur particles. Sulfur in powder form increases the explosion hazard. The precautions for handling this form of sulfur are outlined along with a special fire-fighting technique which emphasizes use of an open hose or a low velocity water spray. Bulletin 22 is issued by Ansul Chemical Co., Dept. CP, Marinette, Wis. When inquiring specify CP 8041 on handy form, pages 2 and 3.

You Should Investigate **ELVACET**^{*}

...THE VERSATILE LOW-COST RESIN EMULSIONS

"ELVACET" polyvinyl acetate emulsions can be used for a variety of applications in a wide range of industries. A few of the many suggested applications are listed below . . .

COATINGS . . . "Elvacet" coatings for such materials as paper, cloth, metal, wood, and ceramic ware are easily applied and air dried. These coatings adhere well, are stable to light and oxidation, asphalt-proof, and are not affected by aliphatic hydrocarbons, vegetable oils, or animal fats. Transparency, gloss and adequate water resistance are features. Addition of plasticizers increases toughness and flexibility. Pigmented coatings for paper, fabrics, wall coverings, floor coverings, etc., are prepared using "Elvacet" emulsion as the vehicle and binder.

PAPER AND PAPERBOARD . . . "Elvacet" emulsions are used to stiffen, strengthen, greaseproof and increase the abrasion resistance of paper products. "Elvacet" coatings on paperboard prevent transmission of odor from the paperboard to contents.

TEXTILES . . . "Elvacet" emulsions find many uses in the textile field. Durable finishes for a full, firm hand on cotton and synthetics . . . finishes on printed and dyed fabrics for brighter shades . . . binders in back-filling . . . stiffeners for felting, cloth, straw . . . etc.

YOU may find that "Elvacet" polyvinyl acetate emulsions are just what you need for improving your product . . . to develop new and profitable materials. Because they are water emulsions, there is no need for expensive solvents. Films made with "Elvacet" are greaseproof, glossy, exhibit excellent stability to light and oxidation, and adhere well to a wide variety of materials.

"Elvacet" emulsions are highly stable and can be used with simple equipment. Having a high solid content, they are readily diluted to desired concentration by addition of water. Plasticizers, pigments, solvents, thickeners, and other materials commonly used in binding and coating formulations can be used to modify the properties to obtain special effects.

WATER SYSTEM PAINTS . . . "Elvacet" frequently used as vehicle. Paints are non-yellowing, non-oxidizing, and adhere well to damp or dry surfaces. Superior gloss and good resistance to scuffing, grease, oils and solvents are other features.

PRIMER SEALERS . . . Can be formulated with "Elvacet" for fast drying and good adhesion to dry or damp surfaces—plaster, wood, fibreboard, acoustical tile, stucco, brick, cinder block, cement, glass and canvass.

SEEPAGE SEALERS . . . Modified "Elvacet" emulsions are effective seepage sealers for interior application to cement and brick.

NON-WOVEN FABRICS . . . "Elvacet" binder for non-woven fabrics does not discolor or lose bonding strength in sunlight, atmosphere or shelf storage.

LAUNDRY FINISHES . . . Can be prepared with "Elvacet" base. Liquid finishes are durable and easily applied without heat. Improved finish is a feature.

CARPETING . . . "Elvacet" can be used either with starch or alone as a backsize. Improved tuft binding and a firmer, crisper hand are features.

MASTICS . . . "Elvacet" emulsions modified with fillers, plasticizers, etc., make mastic and caulking compounds which adhere well to many surfaces and possess excellent ageing characteristics.

BINDERS . . . Strong durable shapes of many kinds can be economically produced using "Elvacet" as the binder for paper pulp, wood flour, leather scrap, asbestos, ground cork, textile fibres, clay, sand, plaster of Paris and other similar materials. Air drying after cold pressure molding is a feature in some cases.

^{*}Reg. U.S. Pat. Off.

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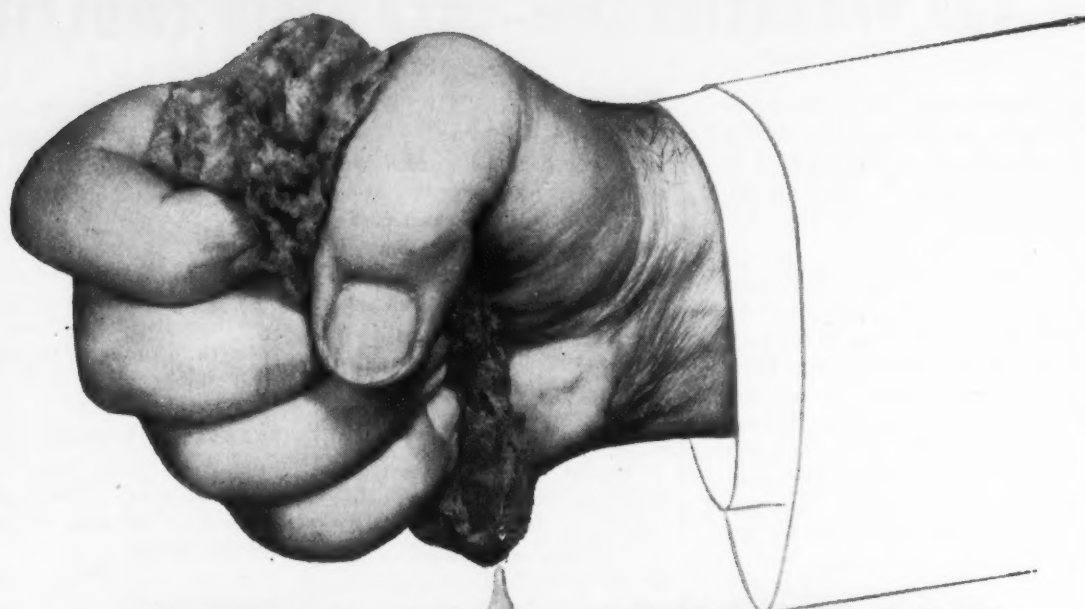


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We'll be glad to supply technical advice and assistance in the adaptation of "Elvacet" emulsions for a specific application. Your inquiry will bring a prompt reply and opinion as to whether "Elvacet" emulsions can be used for your purposes. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

When inquiring check CP 8042 on handy form, pgs. 2-3

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and *Save* the cost of shipping and handling a gallon of water with every 100 pounds of citric acid

There are 8.58 pounds of water of crystallization in every 100 pounds of Citric Acid U.S.P., but there is *none at all* in Pfizer's Citric Acid Anhydrous. You save 8½ pounds in shipping weight for every 100 pounds of the U.S.P. material formerly used. You can save a ton on a truckload shipment!

Pfizer Citric Acid Anhydrous is prepared by a special process developed in Pfizer's research laboratories. It cannot dry out,

and it does not absorb water. Freedom from caking makes it easy to handle, cuts waste. Its composition remains absolutely constant, insuring uniform results.

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and prices to

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PFIZER

Manufacturing Chemists for Over 100 Years

When inquiring check CP 8043 on handy form, pgs. 2-3

MATERIALS

Introduces stabilized chlorinated rubber for better paints . . .

material improves heat, light stability, reduces under-film rusting of metal

Uses: For formulating alkali, acid, and fume resistant paints for metals.

Features: Stabilized grade of chlorinated rubber offers paint formulators marked improvement in heat and light stability, better weathering, and a reduction in under-film rusting.

Description: Stabilized Parlon (maker's chlorinated rubber) contains a small amount of an epoxy-type stabilizer that is water-insoluble and is readily compatible with resins and solvents used in formulating paints.

Stabilized Parlon minimizes corrosion of the interior of metal containers in which paints are packaged.

(Development of the Hercules Powder Company, Inc., Dept. CP, Wilmington, Del. . . or for more information check CP 8044 on handy form, pages 2 and 3.)

Gives nylon fibers abrasion resistance on the loom . . .

water soluble size also leaves tough film which virtually prevents soiling during weaving

Uses: Size formulation for nylon. Binds the fibers together and protects them from loom chafing

Features: Prevents nylon yarn from fraying, which causes the fibers to ball-up and form a "floater" which is woven into the fabric. In addition to giving fibers good abrasion resistance, the size provides a tough flexible film that protects the nylon itself from soiling during the weaving operation.

Description: Good-rite TS-20 is readily applied from water solution, and is easily removed in the scouring process because of its water solubility. TS-20 is supplied as a 25% total solids solution which may be extended by adding cold water. When diluted it is ready for use, it requires no additives.

(Development of the B. F. Goodrich Chemical Company. Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio. . . or for more information check CP 8045 on handy form, pages 2 and 3.)

Joints in acrylic plastics are strong, clear . . .

cements are easily applied and are rapid setting

Uses: Cements for Plexiglas, Lucite, and other acrylic plastics.

Features: Joints have high strength — much better than strength obtained from use of solvents alone as cementing agents. Joints, in addition, are clear and bubble-free when proper procedures are followed.

Description: CD Cement 2 has been specifically designed for Plexiglas, CD 94 is intended as a general-purpose cement primarily for Lucite, and CD 114 is a modified form of CD 94 which shows less tendency to thicken in storage. All are acrylic-monomer-base cements.

Although designed for specific purposes, cements can usually be used interchangeably with good results. CD Cement is treated for reduced thickening in storage and

CHEMICAL PROCESSING

MATERIALS

requires addition of a catalyst prior to use to hasten cementing action.

(Products of the Chemical Development Corporation, Dept. CP, Danvers, Mass. . . or for more information check CP 8046 on handy form, pages 2 and 3.)

Custom-fabricating from rigid polyvinyl chloride . . .

everything from tank linings to complete process equipment being made to specification

Uses: Rigid polyvinyl chloride articles are now being fabricated to specifications through a combination of extrusion, molding, and plastic welding processes. Fabrications range from tanks and tank liners, pipe and duct lines, exhaust hoods and ventilators, to complete apparatus and equipment.

Features: Fabrications have inherent advantages of polyvinyl chloride — exceptional resistance to water, acids, alkalis, salt solutions, vegetable and mineral oils, plus good physical properties.

Description: The rigid polyvinyl chloride used in these fabrications is known as Agilide. It is nonflammable, odorless, and tasteless. Serviceable temperature range is up to 170°F.

(Fabricator is the American Agile Corporation, Dept. CP, 5806 Hough Ave., Cleveland, Ohio . . . or for more information check CP 8047 on handy form, pages 2 and 3.)

Stop water transmission through masonry walls — coat inside or out . . .

able to withstand hydrostatic pressure of 500 psi from reverse side; decorative and permanent

Uses: Interior or exterior coating for masonry walls. Prevents moisture absorption and water seepage, either above or below grade.

Features: Maker reports coating is able to withstand severe hydrostatic pressures exerted from behind the surface on which applied — actually tested at 500 psi hydrostatic pressure.

Description: Coprox powder is a combination of inorganic mineral and metallic (copper) components. When water is added it interacts and cures to form a hard, dense surface coating. Available in decorative colors, it provides a pleasing, non-powdering finish.

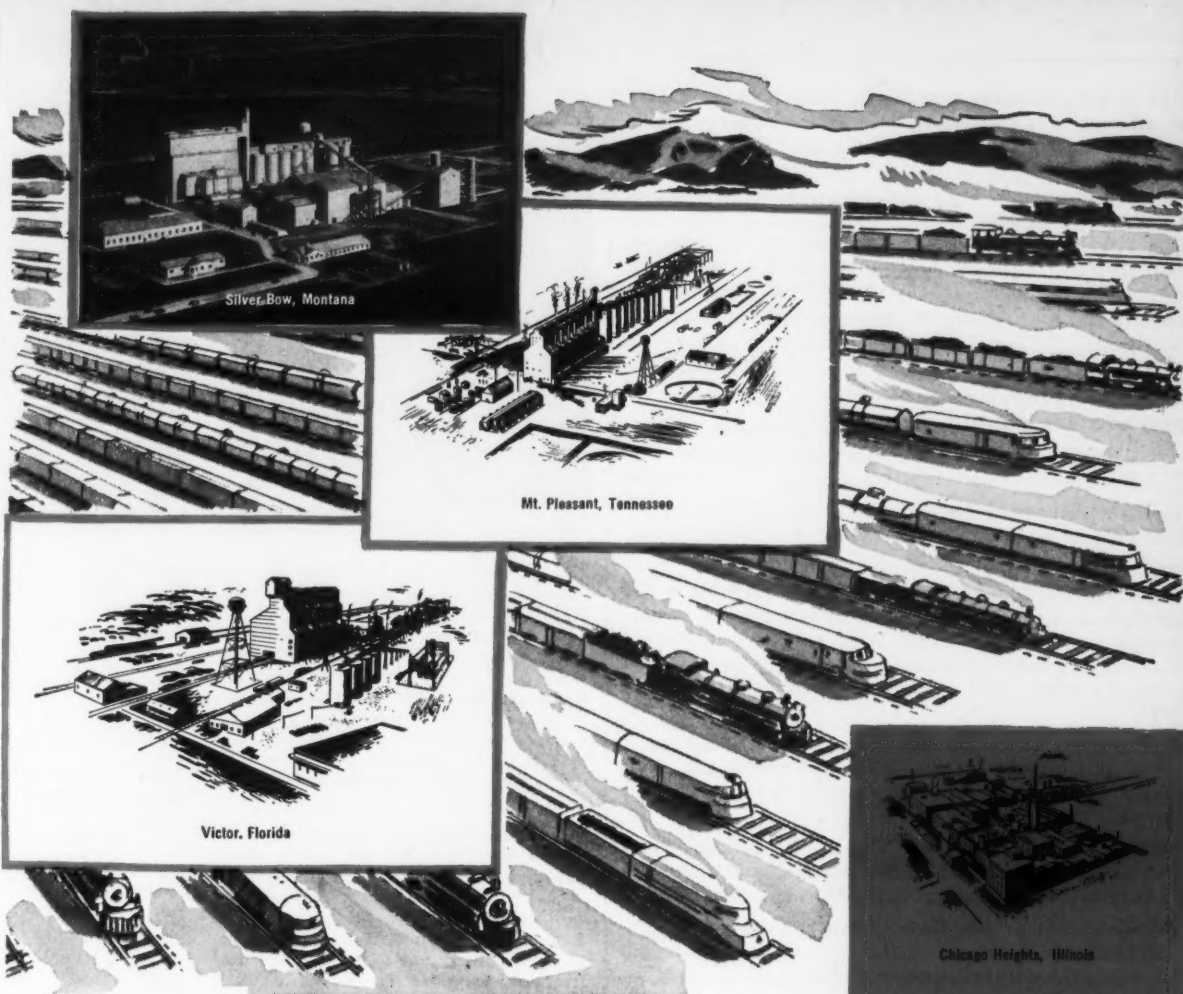
(Product of Coprox, Inc., Dept. CP, Rockefeller Center, New York 20, N. Y. . . or for more information check CP 8048 on handy form, pages 2 and 3.)

Lists more than 600 lab chemicals conforming to ACS standards

Up-to-date, practical information on the purity and packaging of over 600 of maker's reagent and laboratory chemicals fills 128-page price list. All specifications have been amended to conform to the latest ACS purity standards. Also included are useful suggestions on storage of sensitive fine chemicals.

The 1951 edition of "Merck Laboratory Chemicals" is issued by Merck & Co., Inc., Dept. CP, Rahway, N.J. When inquiring specify CP 8049 on handy form, pages 2 and 3.

DECEMBER, 1951



a new advantage for you from **VICTOR**

Victor's first electric furnace unit at Silver Bow, Montana, is completed and production of elemental phosphorus has begun.

The Silver Bow plant, plus the one in Tennessee, and the one in Florida puts Victor in the unique position of being the *only* manufacturer in the industry with three widely separated plants, producing elemental phosphorus. Now only Victor protects your line of supply with 3 separate sources of labor, power and transportation.

The increased quantity of phosphorus produced at Silver Bow is being used to supply Victor's expanded processing plants in Illinois, Tennessee, Pennsylvania, and California. These added facilities will enable us to produce more chemicals, of highest quality, making possible even better service to you!

Write today for Victor's catalog of phosphates, formates, and oxalates. Please write on your company letterhead.

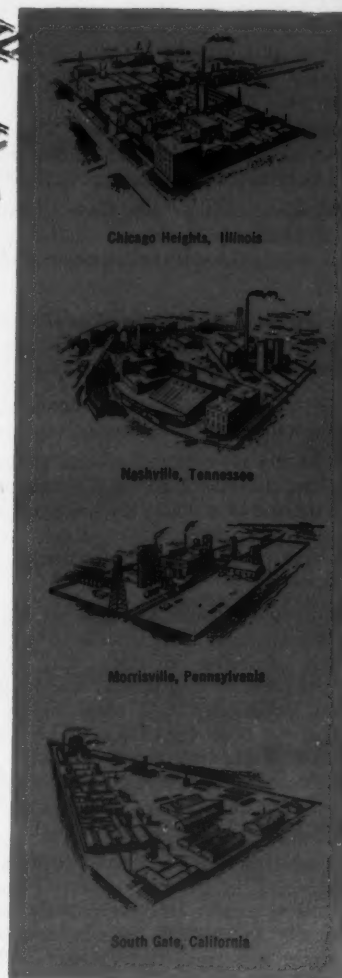


VICTOR CHEMICAL WORKS

141 W. Jackson Blvd.

Chicago 4, Illinois

A. R. Mass Chemical Co., Division,
4570 Ardine Street, South Gate, Calif.



When inquiring check CP 8050 on handy form, pgs. 2-3

MATERIALS

Use of silicone base materials to effect water repellency

Ten pages of material in bulletin detail this silicone base liquid which is applied to make exterior above grade masonry water repellent. General characteristics, materials on which it can be applied, mode of action, test results and demonstrations and application methods are all covered. Bulletin 126-11 is issued by The Monroe Co., Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio. When inquiring specify CP 8051 on handy form, pages 2 and 3.

Combines better properties of the polypropylene and polyethylene glycols . . .

lubricant has good solubility, high flash and low pour points, as well as low toxicity

Uses: Suggested for use as a lubricant in hydraulic brake fluids and as an intermediate for surface active agents.

Based on pilot plant quantities now being used, the product is expected to show utility as a general, water-soluble, industrial lubricant with potential in rubber molding and metal working operations. Utility is also seen as a solvent and carrier, especially in the cosmetic field.

Features: Characteristics include good solubility in water and organic liquids, high flash point, low pour point, excellent viscosity-temperature relationship, and low skin toxicity.

Description: Polyglycol 15-200 is derived from polyalkylene oxides and combines the better properties of polyethylene and polypropylene glycols.

(Development of the Dow Chemical Company, Dept. CP, Midland, Mich. . . or for more information check CP 8052 on handy form, pages 2 and 3.)

Properties of these askarels suit them for cooling and insulating . . .

material has been in commercial use for 20 years in transformers, regulators, capacitors

Pyranol was developed around 1928 to meet a specific need — the elimination of the fire and explosion hazard inherent in the use of mineral insulating oil as a dielectric and cooling medium in capacitors, regulators, and transformers. It is one of the family of materials generically known as askarels.

Although Pyranols for different applications have different physical characteristics, all have the distinctive properties of high dielectric strength and non-flammability. Two types are now in greatest commercial use: the transformer and induction-voltage regulator type (#1467); and the capacitor type (#1476). The difference between them serve to illustrate the wide range of physical properties possessed by these liquid materials. Most apparent is viscosity; at 37.8°C (Saybolt), #1467 tested 54 seconds while #1476 tested 2400 seconds.

Pyranols are all considered chemically stable even though they are, in general, powerful solvents of most gums, binders, paints, etc., customarily used in oil-filled equipment. Experience gained from transformers in actual service and from factory tests proves that they are non-oxidizing, and that they show no development of corrosive acidity or insoluble sludge over long periods at high temperatures, even up to 150°C.

Textiles and paper given new softness with Armour's Arquad 2HT



Many materials have been given a new softness because of Armour's Arquad 2HT. This new cationic softener produces a full, soft handle with maximum lubricity and a minimum reduction of absorbency. It has particular application to the textile and paper fields, and other uses as an anti-static agent.

Important, too, is the fact that Arquad 2HT is very economical. In many cases it can reduce your softener costs by as much as 33%.

Chemical Composition—Arquad 2HT is a distearyl dimethyl ammonium chloride. Its outstanding softening properties appear to be due to the presence of the two long fatty chains in the molecule. Arquad 2HT carries a positive charge which is naturally attracted to the negatively charged fabric. This leaves the fatty end exposed to contribute its qualities to the hand of the goods.

Textile Applications—As a cationic-active softener, Arquad 2HT is substantive to textile materials and can be readily exhausted onto cotton, rayon and wool from a long bath. As a result, Arquad 2HT can be applied most economically in the mill or laundry and the full value obtained. Arquad 2HT is compatible with certain finishing agents such as starches, dextrans, glue and gelatin.

Paper Applications—Arquad 2HT may also be used for softening paper products. By its use, lower grade pulp may be insured the softness of more expensive stock. While the principal interest in softness lies in the tissue and paper napkin field,



applications to other grades of paper stock are now under investigation.

Toxicity—Toxicity, dermal irritation and dermal sensitivity tests, conducted in our laboratories, show no positive indications with respect to Arquad 2HT in normal use dilutions.

Availability—Arquad 2HT is sold in 75% active concentration. It is shipped packed in specially lined open-head drums holding about 400 pounds. Write today for additional information, pound samples, as well as price quotations.

Armour testing oil soluble corrosion inhibitor

If you are manufacturing lubricating oils, cutting oils, etc., you should take a look at Armour's Duomeen T Dioleate. Tests indicate that Duomeen T Dioleate answers the need for a good oil soluble corrosion inhibitor that works effectively in low concentrations.

Duomeen T Dioleate passes the Navy Department Static Water Drop Test, in concentrations in the range of 0.015%. It also passes the Navy and Army HBr test, as given in Section F-3 (a)12 of Navy Department Specification 52C18, dated June 1, 1947, and Army Specification 2-126, Section F-4D, dated August 6, 1946.

Duomeen T Dioleate (N-tallow-trimethylene-diamine dioleate) is of a soft, pasty consistency and light tan in color. It is soluble in non-polar solvents, partially soluble in polar-organic solvents, and insoluble in water.

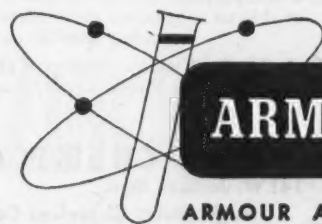
Like other polar-organic compounds, Duomeen T Dioleate is adsorbed from solution onto metal surfaces. However, because of the two polar groups on each molecule it is much more firmly bonded than are mono-polar molecules. It is believed that this compound plates out on metal as a close-packed, ordered monomolecular film, forming a "planar crystal" type of structure. It is believed that the molecules of a non-polar solvent orient themselves in the spaces between hydrocarbon chains, forming an effective diffusion barrier. This would explain the effectiveness of lower concentrations of this compound, which have given complete corrosion inhibition in certain tests. For laboratory samples, fill out the coupon.



If you produce low-sudsing detergents, shampoos, floor wax emulsions, soluble oils, water-emulsion paints, Armour's Etho-chemicals will interest you. Information about the many uses of these versatile chemicals, and a good section on emulsion uses particularly, are contained in a booklet entitled "Ethomeens, Ethomids, Ethofats," which is now available. Surface activity of these chemicals is explained, both in simple theoretical terms and in relation to particular problems which are commonly met. Thus this booklet will prove equally valuable to the soap chemist or his research partner, and to the newcomer to the fields of industrial chemistry where these chemicals are used.

Another book giving both extremely useful background information and use-data is "The Chemistry of Fatty Acids." This booklet is designed to provide complete basic coverage of this complex and constantly expanding field. Some idea of the extent of coverage can be gained from this incomplete listing of topics: sources of fatty acids; their composition; saturated fatty acids; unsaturated; unusual types; synthesis from natural acids; isomerism; general reactions; reactions involving the double bond; and finally, a consideration of the major types of fatty acid derivatives, from acyl halides to nitriles and amines.

If you are working in a field involving the use of either the Etho-chemicals or fatty acids, these books provide both physical and chemical data. For your copies, simply send the coupon.



ARMOUR

Chemical Division

ARMOUR AND COMPANY, 1351 WEST 31ST STREET, CHICAGO 9, ILLINOIS

FRACTIONATED COCONUT OIL FATTY ACIDS IMPROVE PRODUCTS

Since the introduction of fractionally distilled coconut oil fatty acids, many chemists have been quick to see and use the advantages of these products.

Ordinary distilled coconut oil fatty acids are mixtures of nine different fatty acids in percentages varying from 0.5% to 48%. Each of the nine component acids has its own specific chemical and physical properties which make it valuable for certain uses but unsatisfactory for others. Of course, this has been a handicap to manufacturers formulating quality products.

Today, however, you are no longer forced to buy a mixture of nine coconut oil fatty acids in order to secure the one

you really want. The Armour-developed fractional distillation process makes possible the separation of mixed coconut oil fatty acids into their component acids with a degree of purity never before possible . . . concentrations of above 90%. Now you can select the specific fatty acid you desire . . . no need to take an equal or greater percentage of other acids which either contribute nothing or are definitely detrimental.

And it costs you no more to use Armour's fractionally distilled coconut oil fatty acids than it does to use ordinary products. Carload and tank car prices quoted on request. Write today.

NEO-FAT SPECIFICATIONS

	Iodine		Acid Value		Titer, C.		Color, Lovibond 5 1/4"		Caprylic	Capric	Caproic	Lauric	Myristic	Palmitic	Unsaturated Acids
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	%	%	%	%	%	%	%
Neo-Fat 7 (caprylic acid)	—	2.0	385	394	—	16"	—	0.5R-5Y	90	7	3				
Neo-Fat 9 (capric acid)	—	2.0	323	329	28"	33"	—	1.5R-10Y	3	90		7			
Neo-Fat 11 (lauric acid)	—	2.0	276	282	36"	42"	—	1.0R-10Y	trace			90	9		1
Neo-Fat 13 (myristic acid)	—	2.0	243	249	48"	52"	—	1.0R-10Y				4	90	4	2

Soap shampoos regaining popularity



copious foam. However, until recently such a soap had the reputation of being somewhat irritating to the skin . . . the irritating effect has been traced with a high degree of certainty to the presence of certain fatty acids (caproic, caprylic, capric). The article calls attention to the recent availability of fractionated coconut oil fatty acids from which the supposedly irritating components have been removed.

The Armour Chemical Division is offering a new Stripped Coconut Fatty Acid which contains not more than a trace of the irritating short carbon chain acids. Armour also offers 90% pure fractionally distilled lauric acid (Neo-Fat 11), ideally suited for quality shampoos.

See what these products can do for your formulation. Write today for samples.

Mail this coupon

Check the items you need, fill in name and address, and mail today

- ☐ Arquad 2HT data, samples, prices ☐ Etho-chemicals Booklet ☐ Stearone samples
☐ "The Chemistry of Fatty Acids" ☐ Duomeen T Dioleate Samples ☐ Neo-Fat 11 sample
☐ Coconut Oil Fatty Acids data ☐ Stripped Coconut sample

Name.....Title.....
 Firm.....
 Address.....
 City.....Zone.....State.....

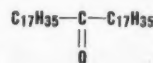


Non-drying alkyds formulated with Neo-Fat 11 are extremely valuable as plasticizers for urea and melamine resin enamels. These enamels have outstanding color retention, resistance to chemicals, and do not sweat out of the final film.



Looking Forward

Stearone



Chemical data: Stearone, a high molecular weight aliphatic ketone, is a chemically inert material, subject to only a few reactions. Because of its inert nature, Stearone is resistant to degradation by high temperatures, strong acids and alkalis.

Physical data:

Physical form	Powder
Color (visual)	White
Color (NPA)	1.5
Melting point	85-87°C.
Specific gravity (solid)	.983
Ketone	96%
Iodine value	1-2
Free fatty acid	3-4%
Sap. value	6-8
Ash	.04%

Solubility: Stearone is only slightly soluble in the usual organic solvents at or near room temperatures. However, Stearone is soluble to the extent of 10-15% in several solvents at elevated temperatures.

MATERIALS

They can be handled at room temperature without toxic effects. Inasmuch as they are non-oxidizing, their dielectric strengths (usually higher than 30 kv in commercial use) are independent of exposure. Dielectric constant is 4.5 at 25°C for both main types, practically the same as for solid insulation commonly used. In event of failure of the apparatus, the only product of decomposition in amounts worth considering is hydrogen chloride — which can be readily detected by its odor.

(Information on Pyranol was briefed from data furnished by the General Electric Company, Dept. CP, Schenectady 5, New York.)

Methyl dichloroacetate lends itself to many organic syntheses . . .

reacts with ketones, aldehydes, amines, and Grignard, nitrogen, halogen, sulfur, and unsaturate compounds

Uses: Ester has potential value in organic synthesis. Uses are indicated in pharmaceutical syntheses.

Features: Two chlorine atoms are easily replaced by a variety of organic groups, affording variety of organic derivatives. Supplied commercially.

Description: Methyl dichloroacetate is a colorless liquid with a 143.0°C boiling point, 1.4431 refractive index at 20°C, 1.3809 specific gravity at 19.2°C, and with an ethereal odor. Maker's specifications are tabulated below:

Purity, % (min)	99.0
Acidity, % (max)	0.30
Specific gravity, 20°/20°C	1.3759-1.3839
Refractive index, 20°/D	1.4374-1.4474

Undergoes reactions with aldehydes, ketones, amines, Grignard compounds, nitrogen compounds, unsaturates, sulfur compounds, halogen compounds. Also undergoes Wurtz reaction and condensations.

(Product of American-British Chemical Supplies, Inc., Kay-Fries Chemicals, Inc., Dept. CP, 180 Madison Ave., New York 16, N. Y. . . . or for more information check CP 8054 on handy form, pages 2 and 3.)

No distortion of thin sheet when using low-melting aluminum solder . . .

flows at 450°F using soldering iron and conventional soldering techniques

Uses: For filling and sealing aluminum where a soldering iron must be used and where 500°F is maximum allowable temperature. Specific example is on aluminum sheeting backed with wood. Applicable not only for aluminum-to-aluminum, but also aluminum-to-dissimilar metals.

Features: Reported to be good on thin sheets where warping and distortion must be avoided. Melts at 400° and flows at 450°F.

Description: No. 37 aluminum solder rod requires no preheating and can be used with soldering iron or other indirect heating method. It is used with maker's No. 37 flux. Conventional soldering techniques are employed. One-eighth and 1/4-inch rods are available, with lengths of 18 and 14" respectively.

(Product of the All-State Welding Alloys Co., Inc., Dept. CP, White Plains, N. Y. . . . or for more information check CP 8055 on handy form, pages 2 & 3.)

Fatty Acids

Long-Chain Fatty Acid Derivatives

Industrial Oils

When inquiring check CP 8053 on handy form, pgs. 2-3



THE QUAKER OATS COMPANY

Announces



the completion of its NEW QO-Furfural Plant at Omaha, Nebraska

The Quaker Oats Company's Omaha Chemical Plant is now producing the industrially important chemical, QO-Furfural. This chemical is made from raw materials such as corn cobs and oat hulls which are replaceable yearly.

The first QO-Furfural was produced at Cedar Rapids, Iowa 29 years ago. Now this versatile chemical is made not only at Cedar Rapids, but also at Memphis, Tennessee and Omaha, Nebraska.

QO-Furfural is used in refining lubricating oils, gas oil and catalytic recycle stock; extractive distillation of C₄ hydrocarbons; as a chemical intermediate in the production of nylon, furfuryl alcohol, tetrahydrofurfuryl alcohol and other chemical derivatives; as an aldehyde in resin manufacture and as a reactive solvent.

*A request on your letterhead will
bring you the Bulletin entitled
"Current Uses of Furfural."*



The Quaker Oats Company

336C THE MERCHANDISE MART
CHICAGO 54, ILLINOIS

EASTERN SALES OFFICE:

ROOM 536C, 120 WALL ST., NEW YORK 5, N. Y.

CHEMICALS DEPT.

In San Francisco The Griffin Chemical Company • In the United Kingdom, Imperial Chemical Industries Ltd., Billingham, England • In Australia, Swift & Company, Pty., Ltd., Sydney • In Europe, Quaker Oats-Graanproducten N. V., Rotterdam, The Netherlands; Quaker Oats (France) S. A. 42, Rue Pasquier, Paris 8^e, France
In Japan, F. Kanematsu & Company, Ltd., Tokyo

When inquiring check CP 8056 on handy form, pgs. 2-3

MATERIALS

Clear coating renders masonry surfaces water repellent . . .

long lasting, does not yellow with age; silicone resin applies by brush or spray

Uses: Water-repellent coating for porous exterior masonry surfaces such as brick, concrete, stucco, limestone, sandstone, and mortar.

Features: Easily applied by either brush or spray. Being transparent, it does not change the color or texture of the surface to which applied. Long-lasting and does not yellow with age. Said to penetrate as much as one-quarter inch into the surface to resist penetration of water. It does not prevent masonry from breathing, thus allowing it to dry. Minimizes the disintegration of masonry by weather and repels water-soluble stains and dirt.

Description: Silipruf is a clear, silicone resin coating that can be applied at temperatures as low as 15°F. Compared in laboratory tests with conventional aluminum stearate and paraffin wax-drying oil formulation, Silipruf was shown to have longer effectiveness, and reduced effluorescence and blushing.

(Development of the Preco Chemical Corporation, Dept. CP, 40 East 40th St., New York 16, N. Y. . . . or for more information check CP 8057 on handy form, pages 2 and 3.)

Produces bright zinc plate without bright dip in still bath . . .

process uses non-sludging zinc-aluminum anodes and gets current efficiencies from 60 to 85%

Use of a special additive permits bright zinc plating in a still bath without the use of bright dip. Current efficiencies from 60 to 85% are the general rule in this process. Brightener BSZ-300 is added to the bath at 1 gal/100 gal electrolyte and after an initial period, is fairly easy to maintain at this concentration. A bright dip may be used if desired and will compensate for minor errors in the bath and in technique.

Electrolyte may be used at either of two concentrations — depending on desired current efficiency at the cathode. Main constituents are: zinc cyanide, sodium cyanide, and sodium hydroxide. Brightener BSZ-300 is supplemented by a second additive at a lower concentration. BSZ-301, the supplemental agent, overcomes the slight tendency of the plate to blister on heating.

Low concentration limit for the zinc should be 4.4 oz/gal. Higher concentrations can be easily used where increased current densities can be handled. This latter condition is more efficient. Because of a tendency of zinc going into solution from the zinc-aluminum anode faster than it is plated out, zinc concentration may rise objectionably high. This can be controlled best by removing 10 to 25% of the anode balls, or substituting sheet steel anodes until the proper concentration is restored.

With a zinc content of 4.5 oz/gal, a current density of 40 to 50 amp/sq ft is the bright range. Use of a bright dip (0.5% nitric) raises current density to the 60 to 70 amp range. These recommendations are based on a bath temperature of 75 to 90°F.

While the use of zinc-aluminum anodes does away with the sludging problem, as well as chemical disintegration

CHEMICAL PROCESSING

MATERIALS

while the bath is not in use, it will be found that heavy metals do get into the electrolyte. This is partly due to impurities in the salts and partly to droppings from corroding metal (especially copper) parts, rods, rheostats, etc. These heavy metals accelerate anode solution and lower appearance and protective properties of the plate. Treatment with zinc dust (1 to 5 lb/100 gal) is most effective except where heavy copper contamination is the case. Here, deposition at 2 amp/sq ft should be employed to reduce the copper to 0.04 oz/gal before zinc is used.

If these and other usual precautions (rinsing, cleaning, checking bath, etc.) are followed, it is possible to produce, without bright dip, a brilliant zinc plate. High current densities can be used over a wide range. Control is easy, and the plate readily accepts conversion coatings.

(Summarized from a detailed report which includes analysis methods and other practical tips for the use of this method. This report "H-VW-M Bright Still Zinc Process" is a publication of the Hanson-Van Winkle Munting Company, Dept. CP, Matawan, N. J.)

No surface preparation to inhibit rusting of metals . . .

wire-brushing, scraping, sandblasting eliminated because coating penetrates and locks existing rust

Uses: Anti-rust paint for both interior and exterior use on either old or new metal.

Features: Can be applied over rust without wire-brushing, scraping, or sandblasting.

Description: Rust-Cure is reported to penetrate through existent rust layers and effectively seal the surface against further rust action. It is compounded for brush application, but may be thinned with Rust-Cure Solvent for spray use.

Black and aluminum grades are for use solely as a finish coat, while clear grade can be painted-over with other finishes. Aluminum grade is said to contain almost twice as much aluminum pigment as conventional paints; finish is exceptionally brilliant.

(Rust-Cure in 1 and 5-gal cans and 55-gal drums is a product of The Monroe Company, Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio . . . or for more information check CP 8058 on handy form, pages 2 and 3.)

Refinery will recover sulfur from waste gases . . .

Shell Houston plant expects to get 13,000 tons/yr by catalytic conversion

Shell Chemical Corporation plans to have a unit for recovering sulfur from waste refinery gases operating by mid-1952 in its Houston plant. Output will be sold for conversion to sulfuric acid. Not only will the new unit conserve a strategic raw material, but will also help to eliminate the problem of atmospheric pollution in the heavily industrialized Houston area.

In the recovery process, waste refinery gases, containing hydrogen sulfide, carbon dioxide and a small amount of light hydrocarbons, will be burned and catalytically converted to sulfur at an annual rate of more than 13,000 tons.

(Shell Chemical Corporation, Dept. CP, 50 W. 50th St., New York 20, N. Y.)

DECEMBER, 1951

Jefferson Ethylene Oxide

A highly reactive chemical intermediate

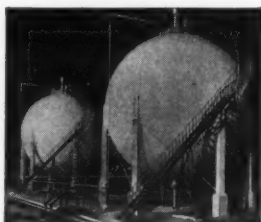
For use in . . .

- Synthetic fibers
- Synthetic rubber
- Textiles
- Detergents
- Fumigants
- Plastics

These are only a few of the many fields where ethylene oxide is a useful raw material. Such widespread use rests on the ability of ethylene oxide to enter into countless reactions. For example, this chemical will react with . . .

- Organic acids to form glycol esters
- Alcohols and phenols to form glycol ethers
- Ammonia to form ethanolamines
- Mercaptans to form thioglycols and ethers
- HCN to form ethylene cyanohydrin

Shipped in tank cars or in ICC 5P insulated drums, 400 lbs. net. Samples for experimental use are available. Please make requests on your company letterhead . . . address to Department D.



Pressure spheres store ethylene oxide at the Jefferson plant at Port Neches, Texas.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.



ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Antimony trichloride and similar compounds react with ethylene oxide to give haloethyl derivatives which may be utilized in the preparation of protective coatings, impregnants, adhesives, binders, and fungicides.

Non-glutinous starch (e.g. corn starch) is modified so as to resemble closely glutinous starch by reacting the granular starch under pressure with about 5% by weight of ethylene oxide. The granular structure is not affected, the product will form a cohesive paste when cooked with water and retrograding tendencies are greatly reduced. These are properties which have been found useful for producing veneer glues, paper sizing and coatings, fabric finishing materials, textile printing pastes, and adhesives.

Desulfurization of hydrocarbons is accomplished by contacting the hydrocarbon with ethylene oxide at 150-250°F and separating the resulting hydroxythioethers by distillation.

Creaming rate and cream solids concentration of formaldehyde-treated, chemically creamed natural rubber latex is considerably increased by the further addition to the latex of a non-ionic surface active agent. The surface active agent is formed by reaction of ethylene oxide with a fatty alcohol, fatty acid, or alkyl phenol.

Sterilization of plaster bandages by treating the bandages overnight with ethylene oxide at 37°C proved satisfactory. Wet and dry heat were found unsatisfactory.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Oxide in your products or processes.

When inquiring check CP 8059 on handy form, pgs. 2-3

FOR PERFECT SEALING AT THE LOWEST COST

Specify DURAMETALLIC PACKINGS



DURAMETALLIC CORPORATION, Kalamazoo, Michigan
Sales and Service Offices Thruout the United States and Canada

When inquiring check CP 8060 on handy form, pgs. 2-3

Diethanolamine

Warehouse stocks of Diethanolamine are available in principal industrial areas. Larger quantities are shipped directly from our plants.



Phone or write our nearest office for complete information.

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of
Union Carbide and Carbon Corporation

30 EAST 42nd STREET NEW YORK 17, N. Y.

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Indianapolis
Chicago
St. Louis
Houston
San Francisco
Seattle
Los Angeles

When inquiring check CP 8061 on handy form, pgs. 2-3

MATERIALS

'Cling' of lube oil reduces number of oilings . . .

promotes a clean shop because there is less drippage and spillage

Uses: General-purpose lubricating oil for machinery. With SAE-30 viscosity, it may be used anywhere that such oils are applicable and applied by the same methods. If application is by a circulating system, no particular advantage is gained.

Features: Possesses property of metal adhesiveness. It is tacky and clings to moving parts of machinery, thus reducing the number of oilings required — often by as much as five times, maker reports.

Description: Kling-Oil promotes safer and cleaner shop conditions because there is less drippage and spattering. Tackiness is not affected by the rubbing action of machinery. No gumming or build-up is experienced after continued use.

(Development of the Magnus Chemical Company, Inc., Dept. CP, Garwood, N.J. . . or for more information check CP 8062 on handy form, pages 2 and 3.)

Lists properties of white bentonite and suggested applications

Finding of a sizable deposit of white bentonite on an island off the coast of Italy makes this rare clay available to the American market in several grades. This 8-page booklet tabulates the average chemical composition of the compound — major constituents being silica, 67.42%; aluminum oxide, 15.83%; calcium oxide, 2.65% and magnesium oxide, 1.29%.

Suggested uses of white bentonite cover pharmaceuticals, cosmetics, ceramics and enamel ware. Also, in the formulation of colors and water paints, and in paper and textile coatings. "White Bentonite and Colloidite" is issued by Whittaker, Clark & Daniels, Inc., Dept. CP, 260 West Broadway, New York 13, N. Y. When inquiring specify CP 8063 on handy form, pages 2 and 3.

The View Ahead (Continued from page 4)

lead to a knowledge of the life processes themselves. Very probably the keys to cancer, an abnormal growth of cells, will be found eventually in the keeping of chemists.

It has always seemed to me that a more intense study of the physiology of the invertebrates might be very profitable — perhaps more profitable than the direct attack on human physiology, on which far more effort is being expanded.

In a recent address to the British Association, Professor Hinshelwood referred to the effect of chemicals in producing mutations of cells. Colchicine, for instance, produces new races of flowering plants by increasing the number of chromosomes, and such actions are not confined to the vegetable kingdom. He felt that control of mutation by drugs might be used to control personality.

Closely allied to biochemistry is the study of chemical substances as medicaments. We are only beginning in this rapidly advancing field. We are already able to synthesize vitamins and hormones, so that we can obtain such substances as the estrogens and cortical steroids. Before long, we should be able to make enzymes and to produce inhibitors to control the action of enzymes. During the



SOLKA-FLOC

handles...with the
GREATEST OF EASE!

In fact, when used in making cellulose derivatives, new and modern SOLKA-FLOC is *far easier to handle* than older forms of cellulose. That's because it comes in loose form, flows almost like liquid and lends itself to continuous operation.

Unusually high density and relatively high reactivity are other important advantages you'll find in SOLKA-FLOC. It might open up for you new product possibilities which would not be possible with other forms of cellulose. Learn more about this versatile product. Write to Dept. CP-12 at our Boston office.

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When inquiring check CP 8064 on handy form, pgs. 2-3

CHEMICAL PROCESSING

next 25 years, we should reach an understanding of the nature of viruses and how to control them.

Among the many fields of work in pure chemistry which can be foreseen are discoveries to be made in connection with metallurgy, important advances in the chemistry of layers, discoveries which are certain to be made in relation to kinetics of reactions, and the behavior of catalysts.

The reaction of the future will be closely similar, in many cases, to the way plants and animals make products. We can already guess that living things make these products by catalysis, using catalysts which are highly effective at normal temperatures and pressures. Before long we shall understand the nature of these catalysts and be able to prepare them. Then we shall be able to make chemicals by the direct methods employed in nature instead of by the complicated apparatus of the chemical engineer.

As the standard of living improves, the masses of Asia and Africa are going to demand clothing, and we shall find it difficult to supply the demand. We shall be faced with an actual shortage of textile fiber. True, we are taking large strides into synthetic fibers, but the fiber we would need for clothing the masses must be cheap, very cheap.

I have a vision of vast areas growing some tropical grass or reed giving a heavy yield of cellulose per acre with little cost for cultivation, and then of the solution of the broken down cellulose by some simplified process akin to that used for making viscose — so that the cellulose from the grass could be converted into fibers at an extremely low cost.

Perhaps the most serious problem for the chemists of the future is that relating to the food supply required for the ever-increasing population of the world. Science has greatly decreased the seriousness of epidemics and is now limiting the effect of endemic diseases. With the decrease in early deaths from disease, the population of the world is increasing at the rate of 22-million a year and, as the population grows, the threat of famine increases.

The problem involves two very distinct branches of science. Control of birth-rate is a problem for the sociologists working with specialists in public health. However, to give them time to do their work, the immediate need is an improvement in the production of food, especially in the tropical regions of the world.

Much of the land has been cultivated with little fertilization until it is exhausted. It requires potash, phosphate, and especially nitrate. Some of the new chemical factories established with American aid in southern India will show what can be done in this way. Insecticides are valuable for control of pests, and plant auxins produced synthetically will regulate growth and control weeds. Perhaps we may eventually produce food directly by enzymic reactions or raise a food crop on the ocean instead of the land.

The work of the scientist is in no danger of neglect, but it is quite seriously threatened by the possibility of interference and control. Planning is very necessary for technological work, *but* it should be done by those who understand the work thoroughly. We have much to learn about organization and direction of industrial research. We shall continue to study its problems and to gain experience in its operation.

Behind our applied research and our technology lies the great field of science. Here we need no direction, and we shall resist any attempt to impose direction upon us. We insist on our right to be free, free not only in our life but in our work, free to pursue our studies and investigations wherever the spirit may lead us. Freedom is much more precious than nourishment, shelter, health, and leisure.

(Abstracted from talk delivered at the Diamond Jubilee Banquet of the American Chemical Society in New York on September 5, 1951.)

DECEMBER, 1951



"Sweet solution" to a filtration bottleneck

Gearing sugar production to meet ever-increasing demands is a problem that the sugar industry actually solved years ago when they eliminated filtration bottlenecks by starting to use Celite® filter powders.

Sugar refiners found that pressure filtration, using Celite, completely removed colloidal matter at high flow rates for long, uninterrupted cycles.

Celite's ability to do an exceptional filtering job can be attributed to these

important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known, Celite is available in nine standard grades—each designed to trap out suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder received in your initial order. Thus, with Celite, you can count on consistent clarity in your

filtrates—at highest rate of flow—month after month, year after year.

Helping sugar producers to get faster production is just one way in which Celite has improved operations for many industries. The proper grade of Johns-Manville filter aid will assure you the same results. To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 290, New York 16, N.Y. *No cost or obligation.*

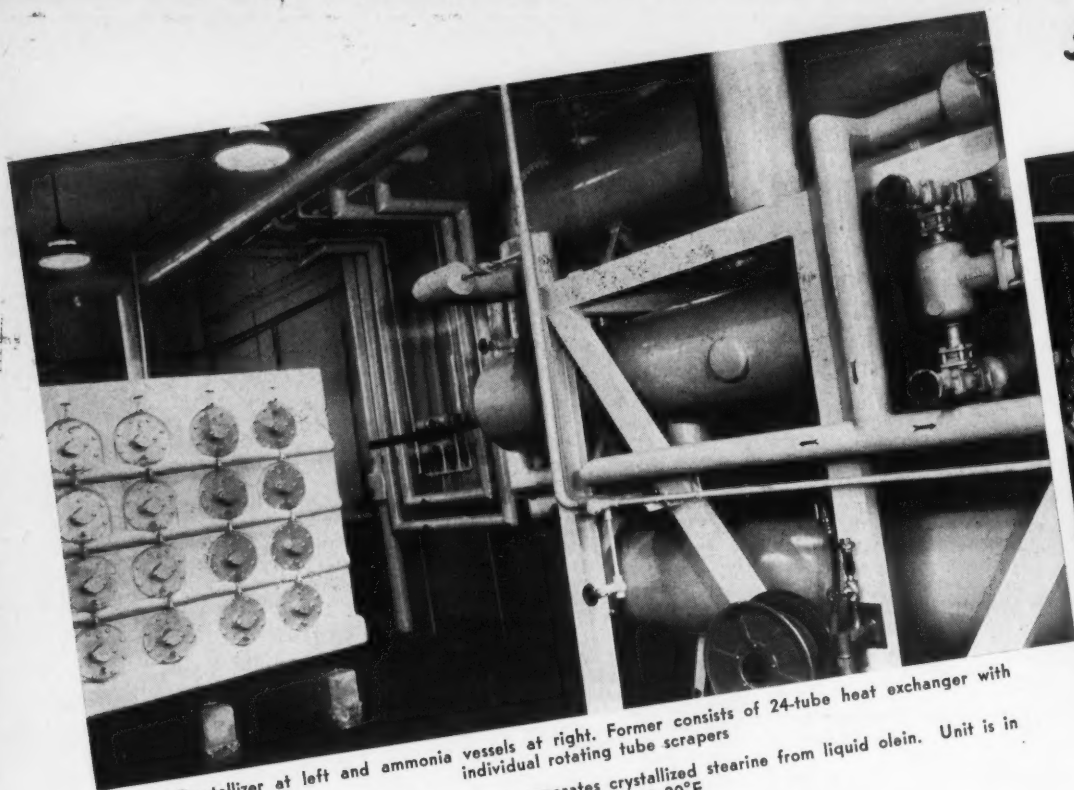


Johns-Manville CELITE

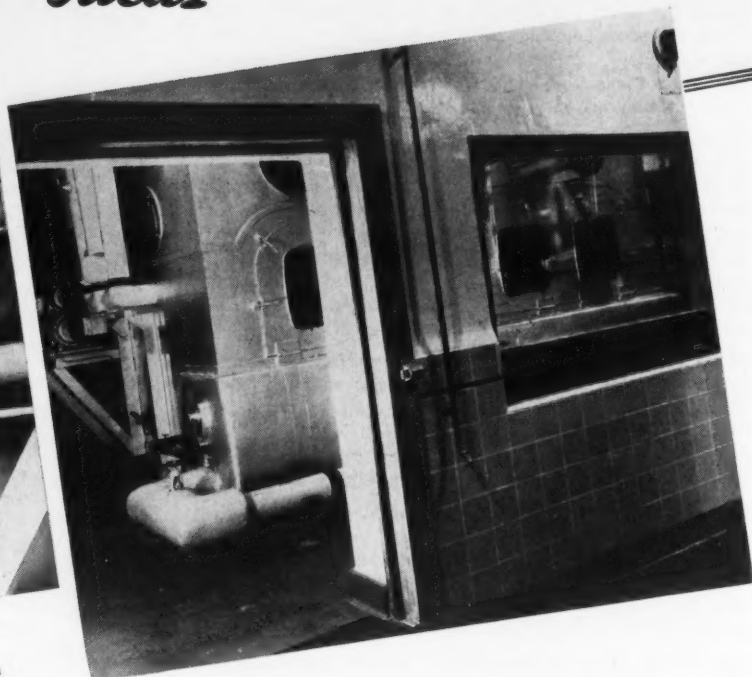
FILTER AIDS

When inquiring check CP 8065 on handy form, pgs. 2-3

Ideas



Crystallizer at left and ammonia vessels at right. Former consists of 24-tube heat exchanger with individual rotating tube scrapers
Rotary drum filter with string discharge separates crystallized stearine from liquid olein. Unit is in cold room held at 20°F



English Plant Separating Olein from Stearine by Crystallization from Methanol

Has throughput of 2500 lb/hr, makes sharp separation without producing intermediate grades; heat exchangers recovery 75% of refrigeration

PRICE'S (Bromborough) Ltd. have been operating a fatty acid solvent separation plant in England since the early part of this year. Having a throughput of 2500 lb/hr, the plant is primarily used for production of commercial grades of stearic acid and oleic acid from distilled bone-fat fatty acids, but is adapted also for separation of other fatty materials where differences of solubility exist. The Emersol process is used (development of Emery Industries Inc. of Cincinnati). This process makes a sharp separation without simultaneous production of any intermediate grades requiring re-processing.

Process consists of: a) dissolving mixed fatty acids in methanol; b) slow chilling of solution to 10°F, causing solid acids to crystallize almost completely, leaving liquid acids in solution; c) filtration of slurry and washing of adhering mother liquor from cake of solid acids; and

d) removal of solvent by distillation, and individual recovery of the solid acids (stearine) and liquid acids (olein).

All these operations are continuous and under the control of instruments in a main control room. By judicious use of heat exchangers, up to 75% of the refrigeration is recovered. All parts in contact with fatty acids are stainless steel or aluminum.

Choice of Solvent

Trials with a number of solvents revealed that stearine crystallized from hydrocarbon and chlorinated hydrocarbon solvents yields plate-like crystals with poor filtering characteristics. Polar solvents such as acetone, and methanol and ethanol were found to give needle-like, readily filtered crystals.

As refrigeration is one of the major costs of a crystallization process, it was desirable to choose a solvent which would effect a sufficiently sharp separation at not

too low a temperature. It was also necessary to take into consideration the volatility, stability, toxicity, cost and availability of the various solvents which seemed suitable. Methanol containing 10% water was the final choice. A 25 to 30% solution of fatty acids in this solvent yields satisfactory results on chilling to 10°F.

This solvent is both inflammable and toxic, but stringent precautions have been taken to guard against both hazards.

The Process

Distilled fatty acids and 90% methanol are pumped continuously through flowmeters, and blended together before entering crystallizer. A small proportion of tallow, up to 1%, may be added to the fatty acids before admixture with the solvent, for improving filtering and washing characteristics of the crystallized stearine.

Crystallizer consists of a long bank of 24 jacketed tubes

CHEMICAL PROCESSING

covered with thick thermal insulation. Solution passes through the inner tubes, where it is cooled to 10°F, and then goes on to rotary drum type, string discharge filter. Cooling is provided by circulation of methanol through a heat exchanger in countercurrent flow to cold filtrate and wash from the filter, then through a standard ammonia refrigerator, and finally through the jackets of the crystallizer tubes (or to filter as wash).

Rotating scrapers in the crystallizer tubes continuously remove films of crystallized stearine, thereby assuring good heat transfer. There is a maximum limit of the speed of scraping and rate of cooling, above which the slurry filterability begins to drop off.

The filter which separates the crystallized stearine from the still-liquid olein is completely enclosed by a hood, and is situated in a cold room maintained at about 20°F by a room cooler which is itself cooled by evaporation of ammonia. Cake is washed with methanol, and then drops into a steam-jacketed trough where it is melted before being pumped to the stearine still.

Removal of solvent from the separated acids is accomplished in the shortest time possible and at the lowest practicable temperature to avoid esterification of the fatty acids with the methanol. This is done by flashing off most of the solvent in a calandria and removing the rest of it in a stripping column with the aid of steam.

Two stills of similar design handle the olein and stearine respectively. The stearine still normally deals with about 3500 lb/hr of cake containing about 65% solvent. The olein still will take up to about 15,000 lb/hr of mixed filtrate and wash liquor.

Methanol vapor from the stills is used to preheat filtrate on its way to the oleic still; it then passes on to a water-cooled condenser.

Refrigeration is provided by a two-stage ammonia compressor driven by a steam turbine, the exhaust of which is used to heat the calandrias of the stills.

(Plant was designed and erected by Chemical Plants Division, Blaw-Knox Construction Company, Dept. CP, 321 Penn Ave., Pittsburgh 22, Pa.)

Treatment reduces dust on polyethylene bottles

A special treatment which reduces the tendency for dust to form on light-colored polyethylene bottles has been announced by the Plax Corporation, manufacturer of the Plaxpak unbreakable bottle. Plax treats its bottles immediately after production. A recent 6-month test on a number of cosmetic bottles showed that treated bottles collected less dust than untreated bottles under conditions approximating those the bottles would meet in retail displays.

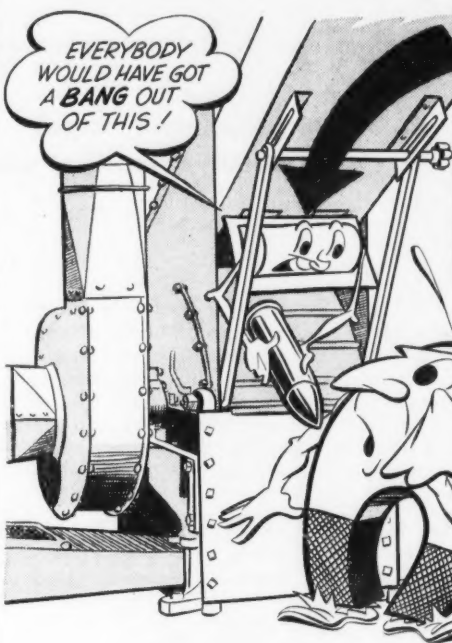
(Plax Corporation, Dept. CP, PO Box 1019, Hartford 1, Conn.)

Limits of impurities tabulated for analytical chemicals

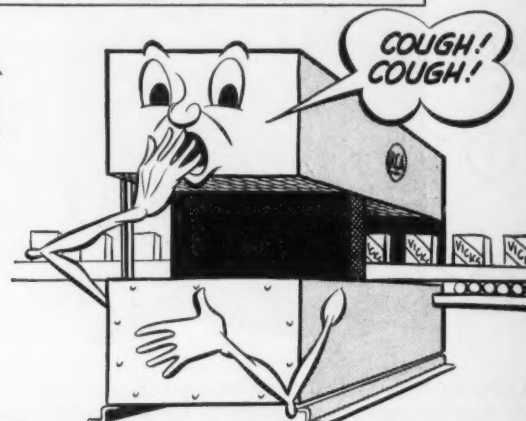
This catalog measures 4 x 8 3/4 inches and contains a listing of more than 400 reagents in its 171 pages. The maximum limits of impurities are tabulated under each chemical of analytical grade. Other chemicals for laboratory use — those meeting NF IX and USP XIV, for example — are also included. "1951 Mallinckrodt AR Catalog" is issued by Mallinckrodt Chemical Works, Dept. CP, 2nd & Mallinckrodt Sts., St. Louis 7, Mo. When inquiring specify CP 8066 on handy form, pages 2 and 3.



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A LIVE 50 MM. SHELL ABOUT TO GO INTO A PROCESSING PLANT'S HAMMERMILL WAS CAUGHT BY AN ERIEZ PLATE-TYPE ATOMAGNET. ALTHOUGH THE SHELL WAS 90% BRASS THE MAGNET GRABBED AN IMBEDDED STEEL RIM AND SAVED THE DAY. ERIEZ NEW PLATE ATOMAGNETS ARE THE MOST POWERFUL EVER BUILT..... CAN BE INSTALLED IN SPOUTS, CHUTES OR SUSPENDED OVER MOVING BELT CONVEYORS. THEY ARE VITAL TO THE PROTECTION OF IRREPLACEABLE EQUIPMENT.



METAL IN COUGH DROPS CERTAINLY STOPS NO THROAT TICKLE. IT'S BAD AND HAS TO BE GUARDED AGAINST. THE VICK CHEMICAL COMPANY ASSURES ITS PRODUCT PURITY BY USING AN RCA METAL DETECTOR, SOLD BY ERIEZ... MANY SIZES TO CHOOSE FROM. THIS INSTRUMENT PUTS UP AN ELECTRONIC BARRIER AGAINST ANY METAL!



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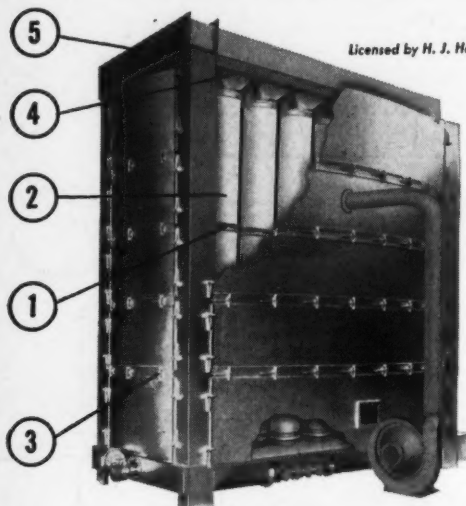
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When inquiring check CP 8067 on handy form, pgs. 2-3

ABSOLUTE RECOVERY OF FINEST DUST PARTICLES

DAY TYPE "AC" DUST FILTER

- ★ 99.998% COLLECTION EFFICIENCY
- ★ NO CLEANING SHUTDOWNS
- ★ HIGH AIR TO CLOTH RATIOS
- ★ SPECIAL FELT FILTER CLOTH



Licensed by H. J. Hersey, Jr.

The DAY Type "AC" Dust Filter provides more efficient filtering for many chemical dusts. Here are several reasons for this outstanding performance, and why you can rely on the DAY Type "AC" Dust Filter to meet your dust filtering problems more efficiently and economically:

1. **Continuous-Automatic Operation:** reverse jet rings travel slowly up and down the tubes cleaning them continuously with a maximum cloth area loss of only 1 1/4% at any time. This eliminates cleaning shutdowns and provides continuous, automatic operation with constant air volume.
2. **Special Felt Filter Cloth:** the gentle, yet positive reverse jet cleaning action permits the use of this high grade wool filtering fabric which collects even the finest dust particles. (Actual tests have shown up to 99.998% collection efficiencies.) Also, the use of this type of cloth allows higher air-to-cloth ratios of 10, 15 or even 20 to 1 with uniform back pressures.
3. **Outstanding Adaptability:** units can be furnished in multiples of 4 tubes; sectionalized steel panel housings (see illustration) for filters requiring vacuum or outdoor installations; quick opening clamps simplify erection and permit removal of sections for easy access to filter. (The DAY Type "AC" Dust Filter can be supplied without housing where housing is not essential.)
4. **No Dust Catching Ledges:** DAY Type "AC" Filters with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
5. **Separated Dust Streams:** one DAY Type "AC" Dust Filter can handle as many as four different product streams simultaneously, without mixing.

WRITE-TO-DAY FOR BULLETIN 491



The DAY Company

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When inquiring check CP 8068 on handy form, pgs. 2-3

Page 42

Ideas

Systematic Maintenance Program Lengthens Life of Industrial Trucks; Saves Materials

**Cleaning, adjustment, repair, replacement of vital parts on
weekly, monthly, yearly basis imperative**

PREVENTIVE maintenance that requires only 45 minutes a week can immeasurably extend the life of industrial trucks. In addition to contributing to continuous efficient performance, such a program aids conservation of essential materials. The cardinal points which form a sound maintenance program are: 1) careful operation; 2) avoidance of overloading; 3) establishing and faithfully observing a definite schedule for cleaning and adjusting truck mechanisms and making replacements when necessary.

Practices to be discouraged are sudden starting and stopping, rapid acceleration from low to high speed with heavy loads, plugging, ramming stationary loads and skidding around corners. It is also important to keep loads within the limits specified.

In setting up a sequence of weekly maintenance operations the first step may well be blowing dust off of truck with dry compressed air. Subsequent steps include the following. 1) Jack up one drive wheel and travel motor. Check for noise in differential. In making this test it is important to keep one wheel on floor to avoid damage to drive motor. 2) Wheel bearings should be checked for any looseness that might result in damage to differential, tires or brakes. 3) Tires should be checked for uneven wear. Drive tires should always be the same size or damage to differential and bearings will result. Careful check should be made for cuts and gouges and metal chips should be removed. 4) Chains and roller sprockets should receive regular inspection. Chain anchors should be examined and check should be made for equal chain adjustment. Chain should be wire brushed to remove any caked dirt or grease.

5) Hoist and tilt cylinders should be examined for leakage at stuffing box. This is due to compression which results from wax impregnation of packing rings. Recommended step is to add two new rings and pull up snug. 6) Disconnect battery by removing running plug and then remove dash or other component covers for access to pump, motors, valves, contactors and controller. 7) Resistors should be kept clean by blowing out dirt with dry compressed air. Check insulators for damage and grounds, replacing as required. If overheated for too long a period, resistor windings will scale, and change in ohmic value will result. Repace as required.

Additional checking operations that should also be made at regular intervals include examination of motor brushes and motor commutator, steering reduction unit, hy-

draulic lines and contactor tips. Once a month, steering gear should be checked for misalignment, or camber or caster of steering wheels. Brakes and seat-interlock should also receive attention.

Truck components that should receive an annual check include forks, which should be examined for bends and cracks. As most forks are heat treated in manufacture they should not be reheated, but straightened cold. Uprights should be removed. Rollers should be inspected for flat spots and bearings washed and inspected before replacing. Mast channels should be checked and gibs, or inserts, inspected. Chains should be cleaned and hydraulic cylinders should be removed, cleaned and examined for wear. Motor should be thoroughly checked and parts replaced as required.

A systematic maintenance program not only keeps trucks working at peak efficiency but permits workers to operate them with maximum ease. Continuous pre-operation operation is also a factor in the most efficient use of various accessories available for special handling jobs.

(Summarized from "Care and Maintenance of Industrial Trucks," issued by Baker Industrial Truck Div., Baker-Raulang Co., Dept. CP, Cleveland 2, Ohio.)

NBS studies provide insight into mechanism of deterioration of nylons . . .

thin film of material was exposed to heat, ultraviolet light and different types of atmospheres

To provide information as to the durability of plastic materials, the National Bureau of Standards is conducting a program of research under the sponsorship of the Office of the Quartermaster General, Department of the Army. One aspect of the research has been an investigation of the mechanism of the deterioration of nylons.

The polyamides investigated were copolymers of nylon salts with ε-caprolactum. Films 0.0001 to 0.0008 inch thick were exposed to heat, ultraviolet light and various ambient temperatures in apparatus designed to produce controlled degradation. They were also subjected to accelerated weathering and outdoor exposure tests.

In addition to analysis of the volatile degradation products with the mass spectrometer, both test and control specimens were examined to determine the changes in chemical and physical structure of the polymer. The

CHEMICAL PROCESSING

techniques used involved infrared and ultraviolet absorption, measurement of viscosities and dielectric constants, electron microscopy, and X-ray and electron diffraction.

Results demonstrated that the general course of the degradation of the polyamides studied involves three different types of changes. First, the polymer molecules break at the C-N bond of the peptide group with the products of dissociation being evolved as carbon dioxide, carbon monoxide, water and hydrocarbons. Second, changes in molecular structure may occur as a result of changes in hydrogen bridging, hydrocarbon packing, dipole rearrangement, and other secondary bonding among the polymer molecules. Third, the amount of strongly bound water and organic liquids such as ethanol may change.

The changes in structure, molecular orientation and chemically bound liquids produce marked changes in physical properties. From the NBS studies, it appears that the service life of polyamides could be extended by adding materials that would absorb ultraviolet radiation or by coating with a material to keep the rays from the peptide group. Apparently it is necessary to protect against heat except under unusual circumstances.

(Summarized from Technical Report 1591, National Bureau of Standards, U.S. Department of Commerce, Washington 25, D. C.)

Radioactive health hazard accurately assessed with film badge . . .

service protects worker by charting week-by-week exposure, protects employer by maintaining record

In view of possible damage suits and state laws governing radiation hazards, a Film Badge Service has been initiated in Burbank, Calif. Technical Associates, of Burbank, are providing a simple and reliable means of continuously measuring and recording exposure of each employee to radiation.

Individual records of employees show any dangerous dose, protecting workers from continued exposure to dangerous quantities of ionizing radiation. At the same time, files of these weekly reports are kept which provide impartial evidence for the use of the employer in any legal matter.

Film Badge Service works like this: Badges or rings are sent out every week to the user. Employees each get a film holder which they use on the job for a week. Exposed film holders are returned to Technical Associates for developing. Duplicate reports are made on what each badge shows. One copy is sent to the subscriber, one is permanently filed for future reference.

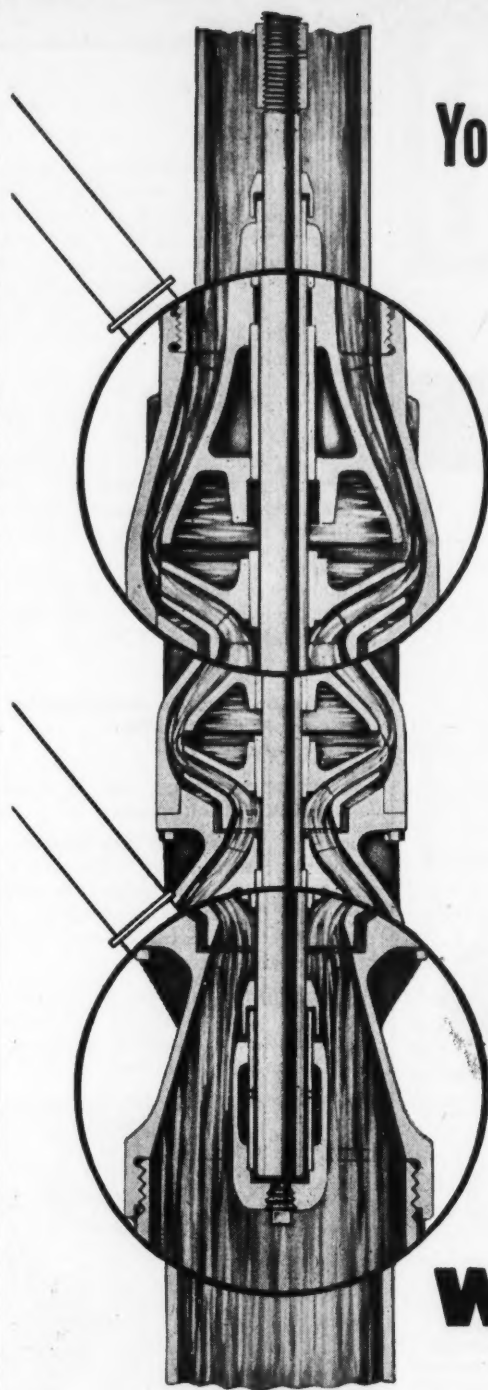
Effective with X-ray equipment, radium, pile-produced isotopes, etc., the badges are made in three varieties. One type of badge is a lightweight aluminum shell, 1-1/2 x 2 x 1/4", with a partially covered window. The shield useful for determining what type of radiation has hit the badge. This type is pinned to the clothing.

The same shell can be used with a stainless steel wrist band in cases where the user's hands and arms are more likely to be exposed. Where convenience dictates, a chrome plated brass ring can be used to hold a 3/8" square film.

Minimum term of the service is 13 weeks. Bulletin giving further details is available.

(Information received from Technical Associates, Dept. CP, 140 W. Providencia Ave., Burbank, Calif.)

DECEMBER, 1951



You Can't Lose Your Bearings

when you follow the tip
to buy **WORTHINGTON**

When you buy a vertical turbine pump, be sure the top and bottom bearings are well protected.

Here's the protection Worthington gives the bearings of its pump—better protection than you'll find in any other vertical turbine pump.

Bottom bearing. It's grease-packed and won't need attention for the life of the pump. Tests of grease-packed bearing versus rubber bearing show the advantage greatly in favor of the former.

Top bearing of oil-lubricated models. Seals above and below the drain ports keep out abrasives which would cause wear and damaging vibration. They also prevent water from entering the tube, which could cause emulsification of the oil and accelerated wear of the line shaft—a Worthington exclusive.

Sand collars. In water-lubricated models, sand collars at both ends of bowl assembly provide further protection by keeping abrasives away from the bearings.

Worthington Vertical Turbine Pumps are available in sizes from 6 in. up, to handle liquids at temperatures of minus 7F. to 500F., with maximum head per stage over the entire size range.

For other Worthington exclusives—such as flanged and bolted bowls in all sizes—write to Vertical Turbine Pump Division, Worthington Pump and Machinery Corporation, Harrison, New Jersey or Denver 16, Colorado.

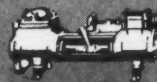
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**THE WORLD'S
BROADEST LINE
ASSURES YOU THE
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EVERY JOB**

Steam



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Centrifugal



When inquiring check CP 8069 on handy form, pgs. 2-3

OLIVITE

Acid-Handling

PUMP

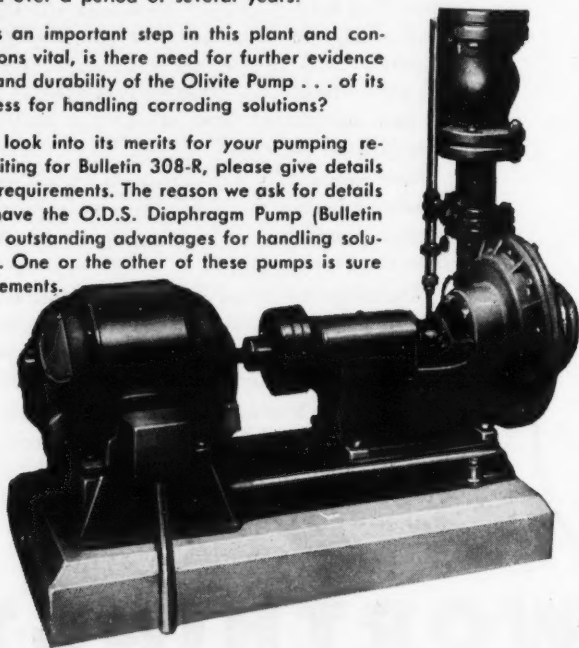
Approved to the Extent
of Over 100 Pumps in One Plant

HERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



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When inquiring check CP 8070 on handy form, pgs. 2-3

IDEAS

Interesting use of metal-to-teslon hermetic seals

Here's another application of metal-to-teslon hermetic seals that may lead to interest in other fields of work. The Fluorocarbon Products Division of the U. S. Gasket Company has announced a line of Chemelec hermetic seals for capacitor can sizes from 0.377 to 0.962". These assemblies are being recommended where severe service conditions are encountered — vibration, shock, high and low ambient temperatures, thermal shock, and extreme climatic conditions.

The Chemelec hermetic seal is a fusion between teslon and metal. Seal itself has a metal surface applied to its outer edge and at the center. It is ready for soldering to the capacitor can and for soldering the lead wire. This design simplifies assembly because it eliminates exhaust vents — the center eyelet accommodating the condenser wire with a loose fit allows exhausting prior to soldering.

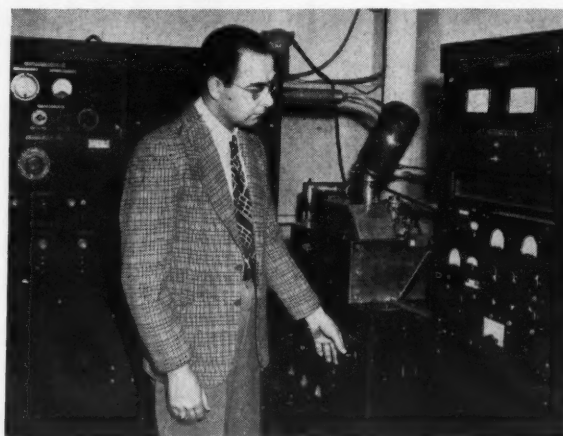
(Summary of information received from Fluorocarbon Products Division of the United States Gasket Company, Dept. CP, Camden 1, N.J.)

Adaptation of mass spectrometer gives rapid quantitative alloy analysis . . .

instrument set-up uses a dynamic correction for variance of ion source

The mass spectrograph has been an attractive tool for analysis for many years. While it is a very specialized tool, requiring highly trained operators, it has the advantage of finding materials which are present in very small quantities and of clearly showing all elements in a sample, regardless of their number.

A sample being analyzed is first broken into ions. The positive ions are accelerated and formed into a thin beam by collimator slits placed in the beam path. Bending the beam through a half circle is done by crossing electro-



Mass spectrometer installation at NBS. Leaning cylinder in corner is the ionization end of the ion path

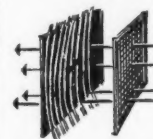
static and magnetic fields. Now since each ion-type (element) has a distinct value or values of electrostatic charge and mass, the beam emerging from the crossed fields is split into many separate beams, each having only one type of ion.

It would follow that by simply measuring the intensity

The Spider Has Nothing On Us!



...not that our wire cloth looms can weave spider webs, but, like the spider we are sometimes called upon to produce special weaves for specific tasks.



For example—a textile processor needed a wire fabric that would: 1. resist corrosion, 2. permit the passage of refrigerated air, 3. provide a dark

background against which broken fibres would be easily visible. Solution: we produced a 50-mesh bronze cloth, chemically colored it black. It filled the bill.

For many years we have supplied another customer with a cloth woven from a specially-drawn, fine silver wire for use in a delicate chemical process. The customer supplies the wire; we supply the craftsmanship.



Another customer wanted cloth woven from lead wire, always a difficult problem because lead itself is so soft. Yet, close attention by the loom operator and close control of the weaving speed successfully completed the order.

Whatever your requirements for industrial wire cloth . . . standard or special types . . . you can rely on our experience for your guarantee of top workmanship, exact adherence to specifications and quality materials when you specify . . .

Cambridge Industrial Wire Cloth

Write for free wire cloth reference manual. Gives metallurgical data, uses and specifications for industrial wire cloth users.



**The Cambridge
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WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES
See "Wire Cloth" in your classified Telephone Directory

When inquiring check CP 8071
on handy form, pgs. 2-3

CHEMICAL PROCESSING

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These Manufacturers assure
top quality engineered grating.

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BORDEN METAL PRODUCTS CO.
Elizabeth, N. J.

HENDRICK MANUFACTURING CO.
Carbondale, Pa.

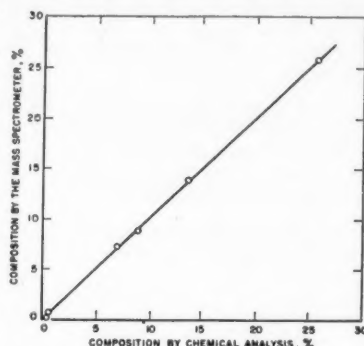
When inquiring check CP 8072
on handy form, pgs. 2-3

IDEAS

of any single ion beam as it emerged from the crossed fields, an estimate of the amount of that element would be available.

Principal difficulty, until now, has been in ionizing the sample in the first place. The usual method has been an arc using electrodes of the materials to be analyzed. Since the arc operates in the vacuum of the instrument's interior, vapors are readily formed. The intensity of ion formation, however, varies badly in this method, and any attempt to check intensity of a single ion coming out of the field would hinge on the ions available to go into the field in the first place.

NBS has refined mass spectroscopy techniques to the point where an accuracy of 3% can be expected. In fact, the least accurate determinations only involve a maximum deviation of 5.3% from the mean value in analyzing stainless steels. Their method involves a measurement on instantaneous total current (ion flow) through the instrument while a simultaneous measurement of the particular ion beam involved is made. This process is carried out by recording instruments which provide a graphic representation of the quantity of each element present.



Checks of the spectrometric method against accepted chemical analysis show that the spectrometer gives results linear with composition

Checks of spectrometric determinations by accepted chemical methods show that the spectrographic method gives results which are linear with composition (see graph). At present the method has been used only with metals, but its extension to other materials is being considered.

(Information received from National Bureau of Standards, U.S. Dept. of Commerce, Washington 25, D.C.)

Impregnating glass cloth with silicone rubber — foresee many uses . . .

present production now going to electrical insulation for motors and cable

Production of silicone-rubber-treated glass cloth for motor and cable electrical insulation has been announced by the General Electric Company at its Coshocton, Ohio, plant. In the dipping process, glass cloth is passed through a liquid solution of silicone rubber. After the application of heat to cure the rubber, the treated fabric is ready for use. The complete process is reported to be continuous.

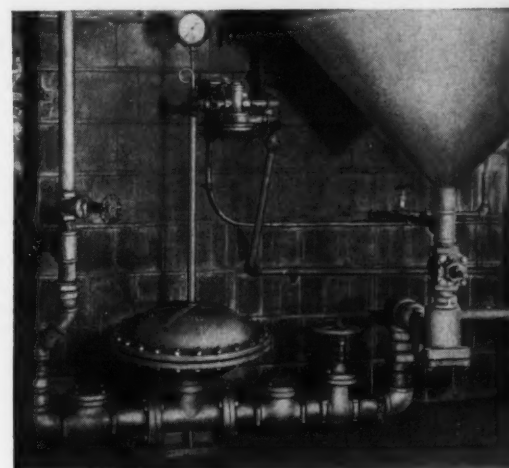
Although present production is slanted to motor and cable insulation because of the fabric's high heat resistance and excellent flexibility and electrical values, the material is expected to find usage in other lines of work. Thirty-six-inch widths from 4 to 10 mils in thickness are being produced.

(Summary of information received from General Electric Company, Dept. CP, Pittsfield, Mass.)

ODS

Diaphragm SLURRY PUMP

link-free simplicity . . . a low maintenance feature!



There's nothing novel about a diaphragm being used to transmit a pumping impulse to stream of slurry or liquid. Up to that point the O.D.S. is similar to all other diaphragm slurry pumps.

But where the O.D.S. Pump does differ is in the way the diaphragm gets its impulse. In the O.D.S. this is created pneumatically—not mechanically. There is no link connecting the diaphragm with the source of power. There is no hole in the center of the diaphragm because there is no need for it. And further there are no slots or holes around the perimeter of the diaphragm where it is clamped between the cover and casing.

This combination of the no mechanical link to the diaphragm and 'no slots or holes in the diaphragm' makes the O.D.S. just about the simplest diaphragm slurry pump you can find anywhere. You can readily appreciate what these two design features mean in the way of low maintenance. Since maintenance is an important factor in pumps, why not get all the details about the O.D.S. Pump? In writing for our Bulletin 309-R, tell us about your pumping problem. You see, we also have the Olivite Centrifugal Chemical Pump. It might be better for your requirement.

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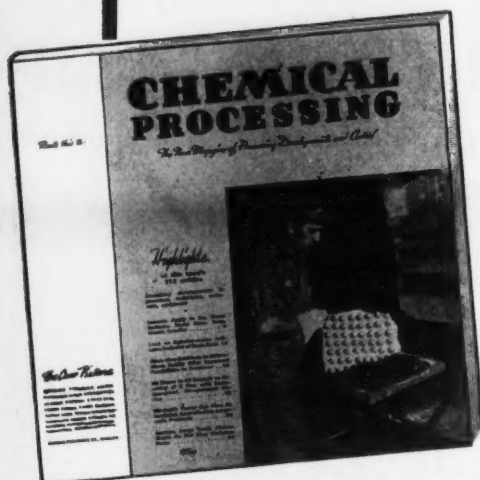
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E. I. Bateman Pty., Ltd.

Johannesburg, Transvaal

When inquiring check CP 8073 on handy form, pgs. 2-3

Have you ever wondered . . . ?



How this magazine comes to you . . . why there's no charge for it ? ? ?

MAYBE, like many others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

No, 'tisn't so. With the exception of a few general magazines (e.g. *READER'S DIGEST*) that sell hundreds of thousands — some millions of copies — most industrial

publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.

Advertisers demand best coverage.

Since advertisers pay the bills, they demand best possible coverage of ALL important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

. . . And you can't do that by *selling* subscriptions — sales costs are high — a large share of the subscribers cancel each year — and no matter how much time, money, and pressure is used there are always some of the important men who *will never buy*.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to handpick the most important men and (b) send the magazine to ALL these men. That's why you get *CHEMICAL PROCESSING* free — that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the chemical processing field.

Have you other questions? Please write us.

Obviously, we can't answer all questions here; e.g. questions such as why some publishers drive so hard to get subscriptions. Briefly the answer to that one is, they get a postal subsidy on "paid subscription". But we choose to send *CHEMICAL PROCESSING* to all the important men who can be interested in reading it. We pay extra postage to give this service to all men like yourself, rather than miss those who can't be forced to pay a subscription fee. That way, we get best coverage for our advertisers too.

If you'd like to know more of the answers to such questions, drop us a line and ask the questions you have in mind. We'll do our best to answer.

Moreover, we'd appreciate hearing from you. Won't you write us, telling us what you think of *CHEMICAL PROCESSING*, how you use it, or how you think we could make the publication better.

CHEMICAL PROCESSING
Published by PUTMAN PUBLISHING COMPANY

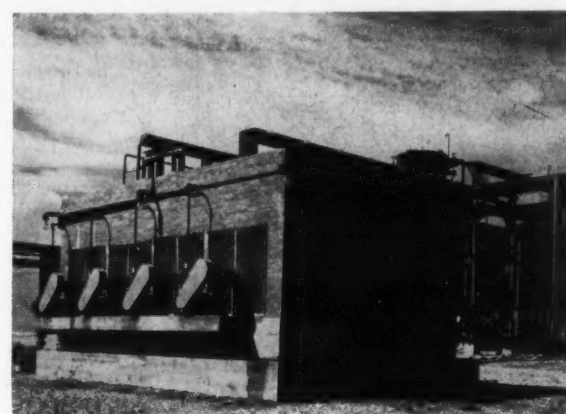
Creators of PUTMAN-STYLE Magazines
... terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more *READER ACTION*

IDEAS

Ceramic saddles used in tower for cooling process water . . .

compact installation cools water from 118 to 86°F at Texas chlorine plant

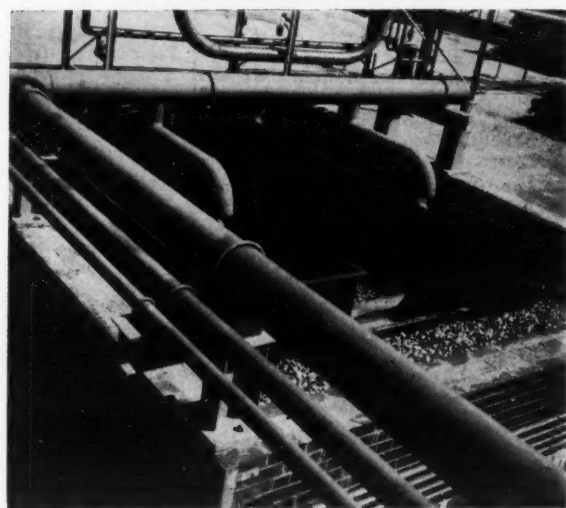
The process-water cooling tower shown in the accompanying two photographs is in operation at a Texas chlorine plant. It cools 600 gpm from 118 to 86°F, the design ambient wet bulb temperature being 80°F. Ceramic saddles are used as fill and for drift elimination,



Exterior of cooling tower for process water of Texas chlorine plant

providing high surface area per cu ft. Height from top of sump to top of tower is 8'6", sump depth 4', length of tower inside masonry is 20', width 12'6".

Incoming water enters two header troughs, thence flows into three feed troughs and 15 distribution troughs. Through weir type distribution system, gravity carries



Top view of cooling tower, showing two header troughs, one of the three feed troughs, and beds of unirrigated ceramic saddles for eliminating entrained mist (drift) from outgoing wet air stream. Cooling beds are located below the 15 distribution troughs which cannot be seen in the photograph

the water over the saddle beds. Air is circulated through tower by four 48" fans. Entire interior of tower was erected by the manufacturer's field crew.

(Designed and built by Aqua-Therm, Inc., Dept. CP, 713 Albany St., Dayton 1, Ohio . . . or for more information check CP 8075 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

IDEAS

An activated silica sol as coagulant aid in H₂O clarification . . .

increases speed of floc formation, floc size and strength

Issuance of a process patent on sterilization and clarification of raw water covers a procedure by the Philadelphia Quartz Co., for preparing an activated silica sol as a coagulant aid. The activated silica sol is used in conjunction with a coagulant such as alum, ferric salts or lime to increase speed of floc formation, floc size, density and strength.

With greater removal of impurities resulting because of this action, longer filter runs are possible. It is reported that either batch or continuous methods of application may be chosen for the process. The company will grant a license to the user of the process without royalty fee.

(Philadelphia Quartz Co., Dept. CP, Public Ledger Bldg., Philadelphia 6, Pa.)

Chromatography teamed with UV spectroscopy to build useful analyzer . . .

fractions from chromatographic column detected continuously

Two graduate students at U.C.L.A. have combined two basic techniques to build the first instrument of its type. Described as a "continuous flow recording ultraviolet spectrophotometer," this instrument can analyze solutions for any component which absorbs UV.

Also, it embodies chromatographic separation so that a complex mixture can be separated into fractions while being analyzed.

Solvents may be selected and feed rates controlled from the panel of the analyzer. These solvents pass through the chromatographic column and extracted fractions pass through the UV-spectrometer. An electronic recorder notes absorption at four pre-set wavelengths. Volume of the fraction is also recorded and allowance is made for collecting each fraction separately, if desired.

(Courtesy of University of California Public Information, Dept. CP, 101 Administration Bldg, Berkeley 4, California)

For more information on product at right, specify CP 8076 . . . see information request blank between pages 2-3.

This is An "Exploratory" Advertisement

Frankly, we don't know what uses there are for the "Utiliscope" (Wired Television) in the chemical industry . . . so in the adjacent ad we are simply telling you what it will do. Based on our experience in other fields, we suspect there are many places in the chemical industry where the "Utiliscope" will improve product quality, save manpower, prevent accidents or help increase production. If you want to look into the possibilities of the "Utiliscope", simply write us for a copy of Bulletin 1025D which explains the equipment and shows various applications. Please address your request to Department "D".

**Diamond Power
Specialty Corporation**
Department "D"
Lancaster, Ohio

Now You Can SEE Where You Can't LOOK



WITH THE DIAMOND "UTILISCOPE"

(WIRED TELEVISION)

In industry, research, commerce, science, etc., many operations and conditions that need to be seen cannot be looked at because it is too difficult or too dangerous.

The "Utiliscope" (wired television) enables you to see where you can't look. Its camera eye can be placed in dangerous, remote or inaccessible spots and it will bring an exact image right to the operator. Moreover, several cameras can observe various parts of an operation or several related operations. Images of these directly in front of the operator enable him to accurately control the whole . . .

TYPICAL USES—Studying destructive tests of engines • Watching flow of molten steel • Checking remote gauge readings • Observing conditions inside furnaces • Viewing nuclear research • Coordinating materials flow on conveyors.

The "Utiliscope" (Reg. U.S. Pat. Office)

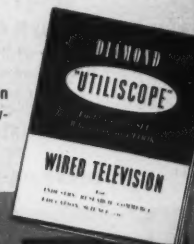


On "Utiliscope" receiver, operator "sees" distant or dangerous operation in comfort and safety.

concentrating responsibility and avoiding mistakes through erroneous information.

The "Utiliscope" saves manpower, improves product quality, increases production and prevents accidents.

The Diamond "Utiliscope" is surprisingly simple and low in cost. No special skill is needed for installation and operation. Its stability and reliability are exceptional. Ask for Bulletin 1025 which shows a wide variety of cost-cutting applications.



4593

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Diamond Specialty Limited — Windsor, Ontario

Since 1903, Diamond has Manufactured Quality Equipment For Industry

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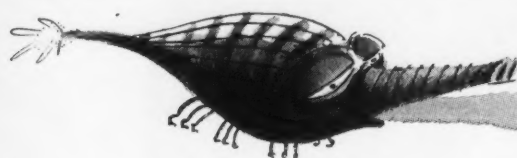
Corrosive fumes...



Salt air...



Hot air...



Moist air...



SO WHAT!

"KARBATE"
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**impervious graphite pipe
takes it all in stride!**

Have you thought about corrosion *on the outside* of your plant piping? Fumes, salt air, hot air, moist air, can eat up *the exterior* of piping, fittings, valves, pumps, and other equipment around a chemical plant. And it costs money to protect ordinary metal surfaces. You have to sandblast, use special coatings, and even then you find the corrosion creeping in and chewing up the equipment...

NOT SO WITH "KARBATE"
IMPERVIOUS GRAPHITE!

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- Both acid-resistant and alkali-resistant
- Light in weight, easy to machine and assemble
- No metallic contamination of product
- Immune to thermal shock
- Very high thermal conductivity

The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

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When inquiring check CP 8077 on handy form, pgs. 2-3

IDEAS

Compare degree of detergency with artificially soiled cotton test cloth...

soil consists of a mixture of carbon, saturated fatty acids and oils, and mineral oil

General requirements of an artificially soiled test fabric are that it: be so soiled that it resembles natural grease, grime and dirt; be designed so that it can give results with one washing; and, be stable in storage. The announced cotton test fabric employs a soil consisting of a mixture of carbon, saturated fatty acids, saturated oils and mineral oil. Saturated oils are used to stabilize the characteristics of the soil. A test period of several months disclosed that detergency readings obtained with the test cloth were consistent.

Detergency reading, as used here, is defined as brightness regain during detergent wash minus brightness regain during a control wash with plain water. Further tests conducted with the fabric indicate that results obtained with different detergents are comparable to results of full-scale washings of naturally soiled fabrics in machines.

The soil-removal value of the fabric has been set at an intermediate range — large enough to permit accurate measurement of brightness gain during a single laboratory wash but small enough to permit use in multi-wash tests.

(A product of Foster D. Snell, Inc., Dept. CP, 29 West 15th St., New York 11, N. Y.)

Three foot concrete walls are part of design for microscope...

remote-controlled 'scope has 1000 power and can be used for photographing; AEC uses it in studies

In studying the effects of radiation on various materials under test in a concrete vault, physicists of the Knolls Atomic Power Laboratory, Schenectady, needed to make microscopic examinations. Concrete walls three feet thick were used to protect personnel from the deadly radiation. Besides this problem of pure distance was the fact that any hole which ran through the wall, however small in diameter, would allow dangerous amounts of the radiation to escape.

Col. H. H. Zornig, of the staff of the atomic project, designed an instrument which was subsequently built by the American Optical Co. The device might almost be described as a telescope-periscope-microscope since it brings the optical image a considerable distance through an offset-path and magnifies it at the same time. In addition to this, the complete system calls for piping light in to provide the illumination. Light source is an arc mounted outside the test chamber.

Multiple objective lenses are turret-mounted, providing magnifications from 1 to 1000 diameters. Focusing, which is remotely controlled, is so designed that once focused at any magnification, the instrument is focused for all magnifications. Remote controls also serve the positioning equipment for the stage. A single eyepiece is used to bring the specimen into position and focus. It is then exchanged for a photographic eyepiece if pictures are to be taken.

(Courtesy of General Electric Company, Dept. CP, Schenectady 5, N. Y., associated with the atomic project, and Instrument Division, American Optical Company, Dept. CP, Buffalo 15, N. Y.)

CHEMICAL PROCESSING

IDEAS

Amyl nitrate ups ignition of cracked distillates for diesel fuels . . .

can increase diesel fuel supply to meet ever-increasing demand

It is common knowledge that the ignition-quality ratings of diesel fuels can be increased by the addition of amyl nitrate. Work undertaken by the Ethyl Corporation shows that beneficial effects for the operation of full-scale engines can be realized from this improvement in ignition rating. Benefits so achieved assume considerable importance when it is remembered that all signs point to a steady increase in the demand for diesel fuels, accompanied by growing demands for use of straightrun stocks of the same boiling range for catalytic-cracking charge stocks, burner fuels, and jet fuels.

While cracked distillates have the advantage of lower pour point and a higher heating value per gallon, in general they are lacking in diesel-fuel ignition quality. If they are to be used, this quality must then be supplied. One of the most desirable means is through the addition of a small amount of an ignition accelerator. To be of commercial importance, however, an ignition accelerator must not damage full-scale diesel engines or increase maintenance problems in any way. Also, it must have low cost for a given gain in cetane number — meaning that such an agent should be effective when used in small quantities.

Of nearly 300 compounds investigated so far by the Ethyl Corporation, amyl nitrate was found to possess the most attractive overall properties. For example, one-eighth to one-quarter volume percent is sufficient for cetane-number gains of four to seven units.

The addition of small quantities of amyl nitrate to distillate stocks ought to substantially increase supplies of diesel fuels by permitting the utilization of greater quantities of cracked distillates.

Better uniformity of fuels can also be obtained and blending can be done with a consideration for other important properties.

(Summary of information received from Ethyl Corporation, Dept. CP, 100 Park Ave., New York 17, N.Y.)

For more information on product advertised at right, specify CP 8078 . . . see information request blank between pages 2-3. ➡



We Haven't Made Them This Big... YET,

but this photographic fantasy is simply to remind you that we do manufacture the most varied line of welding elbows on the market.

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PIPING & SUPPLY CO., Inc.

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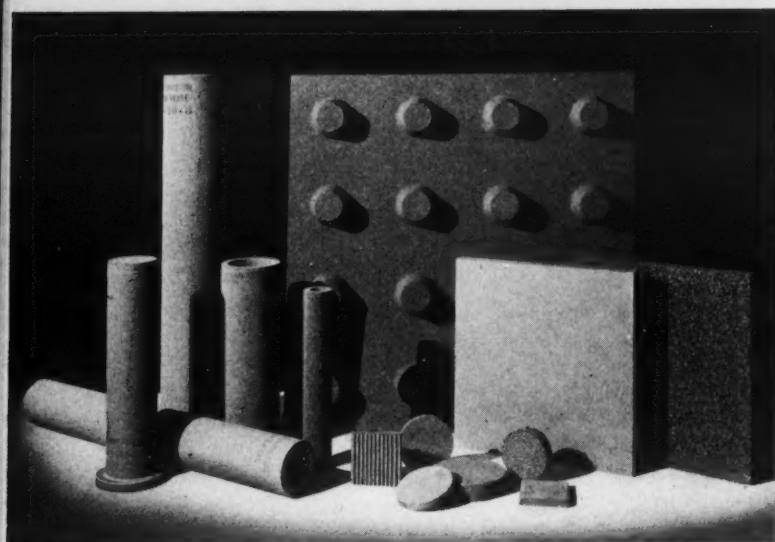
Dimensions conform to applicable size range of American Standard for Butt-Welding Fittings, ASA B16.9. Tolerances much less than allowable. Sizes to 26".



Recommended where space limitations do not permit use of "Long Tangent" or ASA Elbows. Sizes to 30".



Takes the place of a straight size elbow and a reducer. Eliminates one weld, reduces pressure drop, easier to insulate. Sizes to 12", reductions to half size.



Gas-diffusing or filter mediums of Norton ALUNDUM® fused alumina are manufactured for a wide variety of commercial and laboratory operations.

Why should your porous mediums be uniformly porous?

Porosity may be defined as the percentage ratio of pore space by volume to the bulk volume of the piece. There are three types of pores: open, closed, and closed at one end. Obviously, the only passage through the medium is via the open pores. Therefore, if the flow of air or gas through the medium is to be uniform, it is essential that the medium's pores be uniformly distributed.

Norton, long-experienced in the development of fused alumina products, meets this need with porous mediums of ALUNDUM material. Thanks to "controlled structure" processing, all Norton ALUNDUM porous mediums have substantially the same pore volume — while the size and number of open pores are varied to provide the desired permeability.

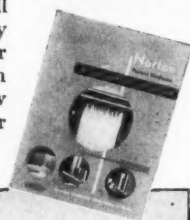
Other Advantages

ALUNDUM porous mediums are unaffected by acid, neutral or slightly

alkaline conditions encountered in commercial and laboratory processes . . . they are exceedingly refractory, withstanding temperatures up to 1000° C . . . their unusual strength assures maximum resistance to abrasion, high operating pressures and breakage or chipping in handling.

Send For Bulletin

Bulletin No. 140 contains complete data as to physical structure, etc., of Norton ALUNDUM porous mediums, and other refractory products. Let it help you decide whether they will benefit your processing. Your Norton representative will be glad to supply you with a copy, or write direct. Norton Company, 567 New Bond St., Worcester 6, Mass.



Making better products to make other products better

POROUS MEDIUMS

Canadian Representative
A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

Fused Alumina Catalyst Supports In Wide Choice Of Surface Areas



Norton Company is now making catalyst supports in commercial quantities, in five different mixtures of refractory grains, ranging from 77% to 89% fused alumina. Water absorption values of these catalyst supports vary from 12% to 22% by weight, while surface areas by the nitrogen absorption method range from 0.025 to 0.821 square meters per gram. They are made in spheres, pellets and rings of varying sizes.

Get All The Facts

Your Norton representative will be glad to give you full information about these new catalyst supports. Or, a letter direct to us will get prompt attention.

NORTON COMPANY
567 NEW BOND STREET
WORCESTER 6, MASS.

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IDEAS

AICHE summarizes results of study in metering molten sulfur . . .

accuracy of four methods other than the conventional procedure are stated

In a paper delivered before the American Institute of Chemical Engineers, metering techniques other than the conventional method were discussed. Ordinarily metering of molten sulfur is handled by means of standard tanks which are filled and dumped until the required amount has been reached. Study indicated by the paper covers methods which have long been used in more common metering applications, but which, because of problems peculiar to sulfur, are only now being applied to it.

In adapting an orifice to molten sulfur use, for example, the line must be steam jacketed and a special manometer must be used. Rotameters have the drawback of becoming plugged with dirt, corroding because of entrained moisture, and sometimes acting up when temperature rises increase the sulfur viscosity.

Results of the study, however, can be tabulated in terms of the accuracy of these and other devices. Listing below summarizes these results:

Accuracy of Various Devices Metering Molten Sulfur	
Device	% Accuracy
Wiers	
90° V-notch	0.4
Rectangular	1.7
Rotameter	2.5
Piston Meter	
Low pressure	2
High pressure	3.7
Orifice	3

Piston meter mentioned in table was a proportioning piston pump which had its cylinders immersed in liquid sulfur and which delivered to a steam-jacketed line.

(Information received from American Institute of Chemical Engineers, Dept. CP, 50 E. 41st St., New York 17, N. Y.)

Copper-plating less expensive with dynel diaphragms . . .

filter cloth fabric greatly outlasts canvas in filtering the alkaline plating solution

Use of dynel fabric for diaphragms in a large Midwest automobile company's plating plant has lengthened diaphragm life and reduced time and labor involved in changing diaphragms. The dynel diaphragms (filter cloth) act as filters for the alkaline plating solution.

Firm formerly used 12-oz canvas that had a life of 7 to 13 weeks. However, when a process change became necessary, life of the canvas dropped to 4 to 6 weeks. Under these severe conditions, dynel fabric has a life of 7 to 10 weeks, more than enough to make the firm consider it economical. Further changes now contemplated may up fabric life from 4 to 6 months.

Dynel staple fiber is made by Union Carbide and Carbon Corporation.

(Dynel filter fabric is supplied by Wellington Sears Company, Inc., Dept. CP, 233 Church St., New York, N. Y.)

When inquiring check CP 8079 on handy form, pgs. 2-3

IDEAS

Study of radioactive products continues — new uses examined . . .

Stanford sees static eliminators and phosphor lighting soon

A recent survey of industrial uses for fission products was conducted on a technical and economic basis by Stanford Research Institute. The Institute is concerned with process wastes from the production of plutonium.

While radioactive, these materials are of no value for explosive or other power, but they do represent a large potential source of low-cost radiation.

At present it would be commercially feasible to use these radioactive waste products for activators in phosphorescent signs and dials, for static eliminator units, for the reduction of starting voltage in fluorescent light tubes, and as radiation sources in process control instruments. With two to five years of development, Stanford believes that this list could be lengthened to include industrial radiography (replacing X-ray), cold sterilization of drugs and foods, and portable low-level power sources.

The aspect of cold sterilization of food is particularly alluring, they feel, "... because of the possibility of obtaining unique final products that cannot be obtained economically by [other] known means." Gamma ray emitters would probably be used in this service. They are also applicable to heat sensitive drugs, pharmaceuticals, and medical supplies.

Further studies must first be made to track down side reactions, but there is no concern over secondary radiation danger in sterilization work.

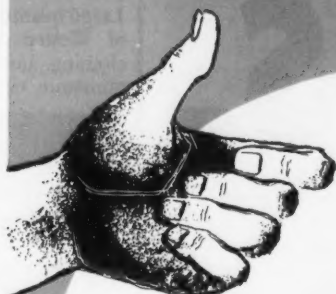
The basic problem in utilization of fission products remains one of lowering costs. Stanford workers believe that at \$50 to \$100 per curie, there would be an industrial market at this time. They are working toward supplying a market of hundreds of thousands or even millions of users at \$1 or \$2 a curie.

(This information is presented in detail in the literature of Stanford Research Institute, Dept. CP, Stanford, Calif.)

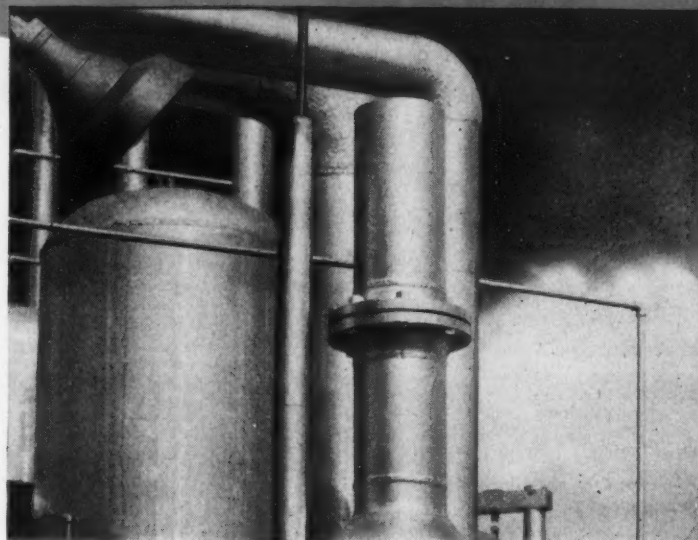
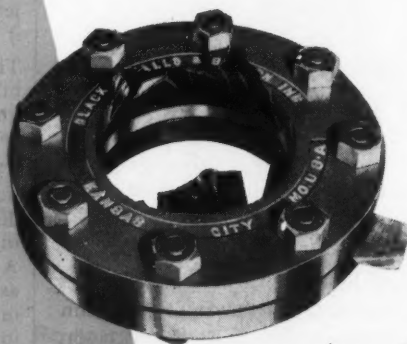


For more information on product at right, specify CP 8080 . . . see information request blank between pages 2-3.

TAKE THE GAMBLE OUT OF SAFETY...



Bet on BS&B Safety Heads for Instant Pressure Relief!



Your present pressure relief devices may be adequate—but are they proof against clogging, corrosion, the human element of maintenance neglect? The precision engineered BS&B Safety Head can eliminate these factors—or protect your relief devices against their effect.

Each Safety Head is the result of careful engineering and metallurgic study. Safety Head Rupture discs are not "stock items"—but made to the exacting specifications of your pressure vessels or lines—your conditions and the gaseous or liquid materials involved. These scientific calculations are double-checked in the special pressure chamber where every lot of Safety Heads is pre-tested for accuracy.

Affording an instant, full pipe-sized vent, BS&B Safety Heads work faster, give complete pressure relief. They can be used as primary or secondary relief, or as protection for your relief valves against corrosion, clogging, fouling or chemical action of the material handled in the vessel or line.

FREE ANALYSIS OF YOUR PRESSURE PROBLEMS

Without cost or obligation, a BS&B Safety Head engineer will be glad to inspect your pressure relief conditions and submit suggestions. The use of Safety Heads will not be suggested where their installation is not warranted. Why not write us, today?



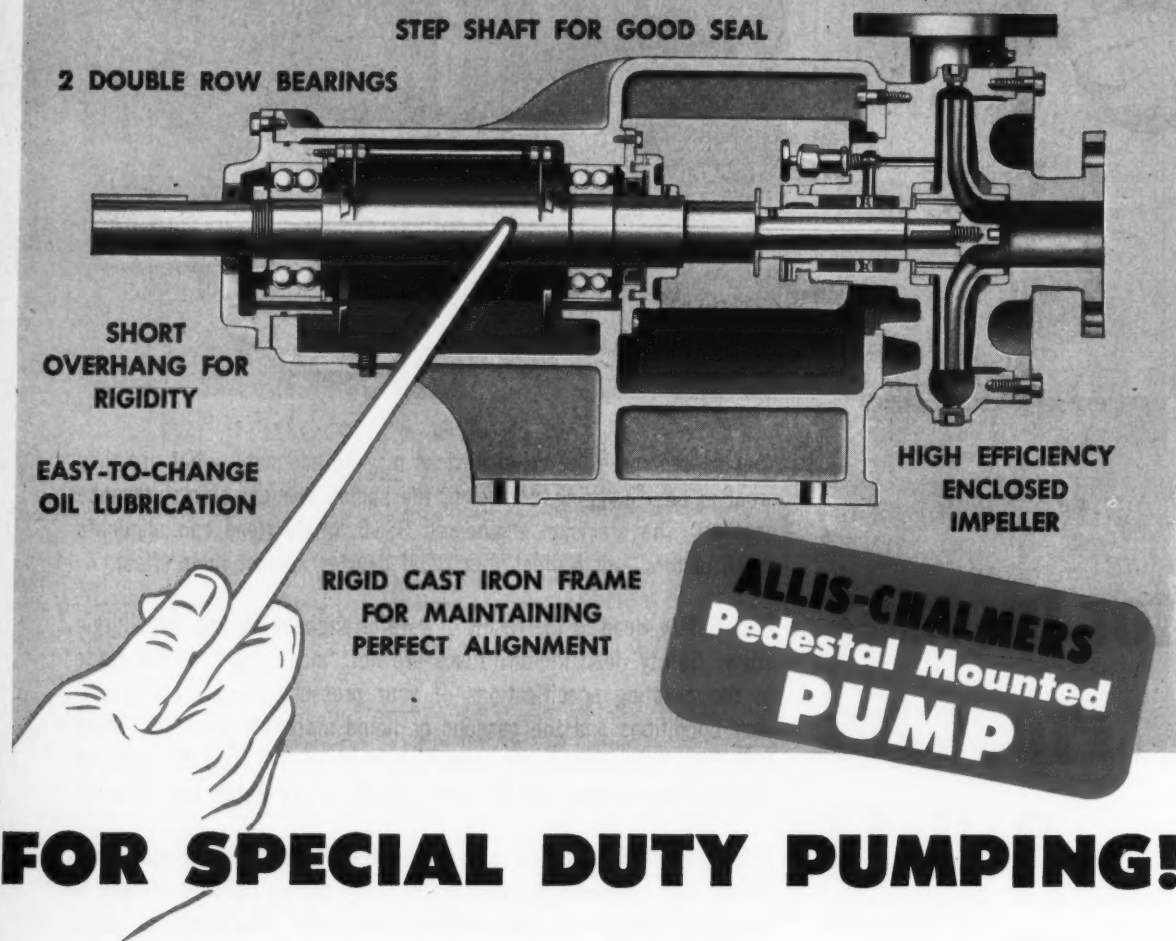
BLACK, SIVALLS & BRYSON, INC.

DEPARTMENT 36-M

7500 EAST 12TH STREET

KANSAS CITY, MISSOURI

Look at This.



FOR SPECIAL DUTY PUMPING!

Easily Made Factory Modifications Make This Pump Ideal for Your Special Duty Jobs!

LET THIS PUMP meet your problems of: temperature, corrosion or contamination.

A wide combination of optional constructions and materials can be used . . . for example, six alternate sealing arrangements. In addition, materials for wetted parts are available, to resist attack of acid and alkaline liquids.

Moreover, Allis-Chalmers application engineers have ex-

perience in handling many types of liquids. They will help you choose exactly the right combination of materials and modifications to give you low cost per gallon pumped.

Allis-Chalmers can furnish the complete pumping unit — pump, motor, drive and control — all mounted on a rigid base ready to install and run. You save time and installation cost. Guarantee covers the complete installation.

Capacities to 1200 gpm; heads to 250 feet; temperatures to 500 degrees F. Call your A-C district office for Bulletin 52B7638, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3349

ALLIS-CHALMERS



When inquiring check CP 8081 on handy form, pgs. 2-3

IDEAS

Miniature tank cars move acids

Large quantities of acids are used at the Indianapolis plant of Western Electric Company, Inc. Wearing protective clothing and taking special precautions, a worker fills a miniature tank car with acid from outdoor storage tanks



which hold a railroad tank carload. The small tank cars are moved into the manufacturing building where they are unloaded into processing tanks as required.

(Western Electric Company, Inc., Dept. CP, 195 Broadway, New York 7, N. Y.)

Filtration saves \$1000/month in lubricant alone on wire drawing machines . . .

continuous system prevents maintenance shutdowns, eliminates burning of die diamonds

For a couple of days every two or three months, the battery of 12 Vaughn wire drawing machines at the Newark, N. J., plant of Wilbur R. Driver Company had to be shut down for cleaning. The foaming, build-up of fats, clogging of jets, and rust in the machine all did their bit in causing these production interruptions. Sometimes the soluble oils employed became rancid and made working conditions unpleasant. At times, clogged jets caused burning of the diamonds in the dies, making it necessary to replace them.

The company switched to a special, very light mineral oil, but found that dirt particles still caused some clogging of the jets. Hence, they installed a system of continuous filtration of the oil.

The filter is operated until pressure reaches 40 to 50 pounds, which takes one to two months, and is then shut down for cleaning. The filter is by-passed during cleaning, so the drawing machines can operate continuously. A sample of sump oil is centrifuged at least once a week as a check. Should any trace of solids be found in the oil, the filter is cleaned immediately. So far, since installation about two years ago, not one speck has been found until filter cycle is complete.

Although the 12 machines have been operating continuously since installation of the filter, only one batch of oil has been put in. Once during the two-year period has it been necessary to put in an additive to bring oil back to its original condition.

Die life has been increased, rust offers no problem

CHEMICAL PROCESSING

any more, and machine stoppage has been eliminated. Although the oil is expensive, savings on the battery are estimated at \$1000 per month, not including savings resulting from elimination of burnt diamonds and shut-downs.

Wilbur Driver uses a similar filter in connection with a Sendzmir ZR-16 81½" rolling mill. Here, a filter medium of brilliant asbestos and activated carbon is preventing increase in acid number of the oil. It is estimated that \$225 is saved every six months over the cost of operating with a previous filtration system.

(Filter and media made by Hercules Filter Corporation, Dept. CP, 204 21st Ave., Paterson, N. J. . . . or for more information check CP 8084 on handy form, pages 2 and 3.)

Little as 0.001 % of chemical whitens and brightens some products . . .

wood stains, oils, fabrics, coatings, plastics, starches, many more yield to effects of fluorescent

Fluorescent chemical is finding numerous, widespread applications. A manufacturer of wood stains has found that 0.005% of the chemical incorporated in his product brings out the contrast in the grain of wood remarkably.

It can be employed for counteracting a slight yellow cast in oils, paper, fabrics, creams, lotions, white polishes, and varnish or lacquer films. Whitening of plastics, paints, synthetic fibers, animal or vegetable fibers, starches, and straws is possible.

In washing compounds it has much-needed value as a protein substantive fluorescent material. It would, for example, adhere to food particles remaining on dishes; inspection of washed dishes under ultraviolet light would then reveal unclean areas.

In some colors and printed products a marked brightening effect is obtained by using 0.001 to 0.10% of the chemical. Wide range of solubility and highly efficient bluish fluorescence are reported.

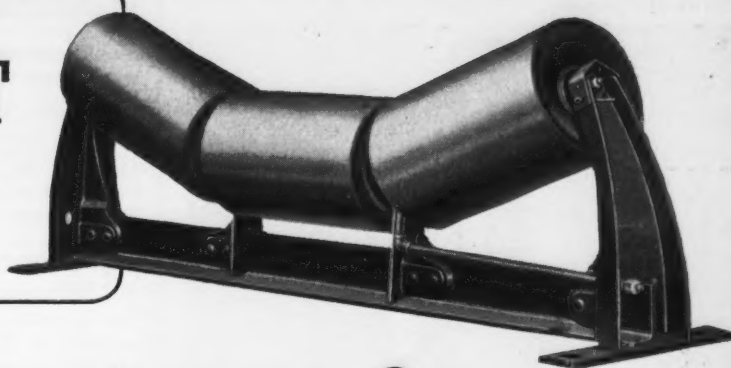
M.D.A.C. is name maker applies to his 4-methyl-7-diethylamino coumarin. Product has molecular weight of 231.28, melting point of 68-72°C, and is in the form of light tan to white crystals. It is odorless. Solubility in water is 0.006% at 25°C. It dissolves readily in aqueous solutions of strong mineral acids to form the amine salt, and is very soluble in organic solvents such as alcohols, ketones, esters, ethers, glycols, and chlorinated hydrocarbons. Very slight solubility is shown in aliphatic hydrocarbons.

Chemical is substantive toward viscose, cellulose, acetate, nylon, and the protein fibers. Substantivity toward cotton is fair. Fastness to washing and bleaching in commercial laundry processing is excellent. No off-colors have developed on aging.

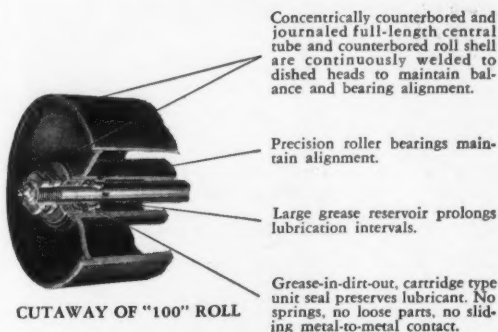
A solution consisting of 0.005% M.D.A.C., 87.5% water, and 12.5% methanol (as solvent) was used to treat half a swatch of viscose rayon. Both whiteness and brightness of the treated half were easily apparent to the naked eye. Exposure to ultraviolet light showed pure blue value of the emitted light. At this concentration of M.D.A.C., water alone could be used as solvent.

(Available in pilot plant quantities only from Carlisle Chemical Works, Inc., Dept. CP, Reading 15, Pa. . . . or for more information check CP 8085 on handy form, pages 2 and 3.)

LINK-BELT IDLERS



... cut your handling costs 3 ways



CUTAWAY OF "100" ROLL

Yes, you save money three ways when you specify Link-Belt Roller Bearing Idlers—
(1) Reduced maintenance, thanks to better lubricant retention and longer-lasting adjustment.
(2) Less "down-time," thanks to husky, self-aligning roller bearings and efficient sealing.
(3) Lower power requirements, thanks to smooth anti-friction action.

And by standardizing its design, Link-Belt gives you the famous chip-handling 45° Idler at a cost lower than you'd expect. You can choose from the full Link-Belt line of standard and heavy-duty 20° troughing, impact-cushioning, belt training and flat belt idlers in a wide range of roll diameters and belt widths.

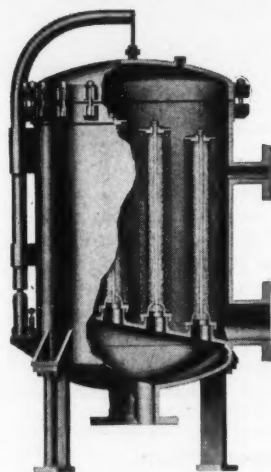
LINK-BELT
ROLLER BEARING IDLERS

LINK-BELT COMPANY
Chicago 9, Indianapolis 6,
Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12,540-A

When inquiring check CP 8082 on handy form, pgs. 2-3

FOR BETTER LIQUID CLARIFICATION

... ALOXITE porous plates and tubes



This pressure filter, which employs multiple ALOXITE tubes, is made by R. P. Adams Co., Inc., of Buffalo, N. Y. It is widely used for clarifying all kinds of process liquids.

Porous Filter Plates and Tubes by

CARBORUNDUM

Trade Mark

Dept. S-121A, Refractories Division

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company.

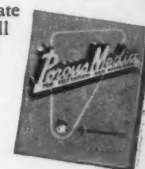
When inquiring check CP 8083 on handy form, pgs. 2-3

It has been established in many filtration processes (using gravity, pressure, vacuum, or centrifuge systems) that liquids can be directly clarified with excellent efficiency by porous ceramic media.

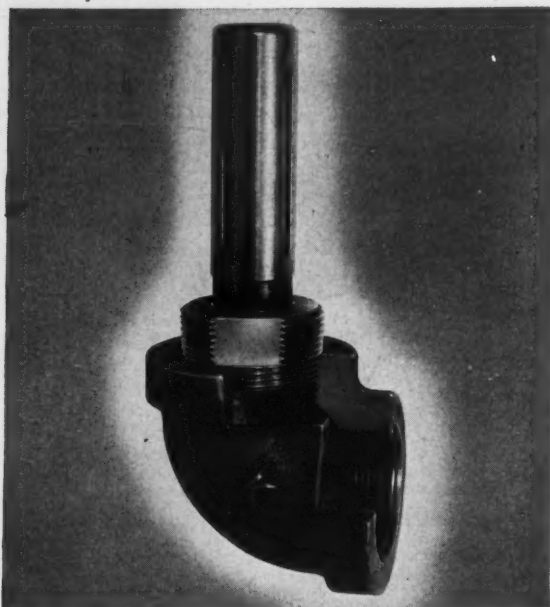
For any given grade or pore size, tubes or plates made of ALOXITE aluminum oxide material, provide maximum area for filtration. This is because uniformly sized pores are distributed evenly over the entire filtration surface—pore area constituting about 35% of the total area. This also contributes to longer service between cleanings or backwashings.

ALOXITE filter media are inherently resistant to practically all acids and can be used safely at working temperatures as high as 900° C. They are very rugged for a ceramic product; are available in various shapes for use in a wide range of equipment designs.

YOU'LL WANT OUR POPULAR BOOKLET. It's the up-to-date reference source on porous media. Its 56 pages cover all fields of filtration and diffusion—including information on application, specifications, designs, installation and operation. Write for your free copy today.



Sixth of a Series



"K" on a fitting means conformity to standards

In respect to metallurgical formula, uniformity of wall thickness, and pressure capacity, "K" Fittings meet the specifications of American Standards on Weights and Measurements with plenty to spare.

Tapping is done according to American Briggs standards for pipe threads. The threads on "K" Fittings are true, full, clean, and perfect.

In chemical and physical properties, "K" Fittings far exceed the specifications of the American Society for Testing Materials.

The Underwriters' Laboratories and Associated Factory Mutual Companies approve the complete "K" line of standard and extra heavy screwed fittings, fittings for sprinkler work, and extra heavy flanged fittings and flanges.

You are on the safe side with a wide margin when you use "K" Fittings. Specify "K's" when ordering from your supplier.

THE KUHNS BROTHERS COMPANY

1808 McCall Street
Dayton 1, Ohio

K

Established 1887

CAST-IRON FITTINGS

3,000 Shapes and Sizes

When inquiring check CP 8086 on handy form, pgs. 2-3

Page 54

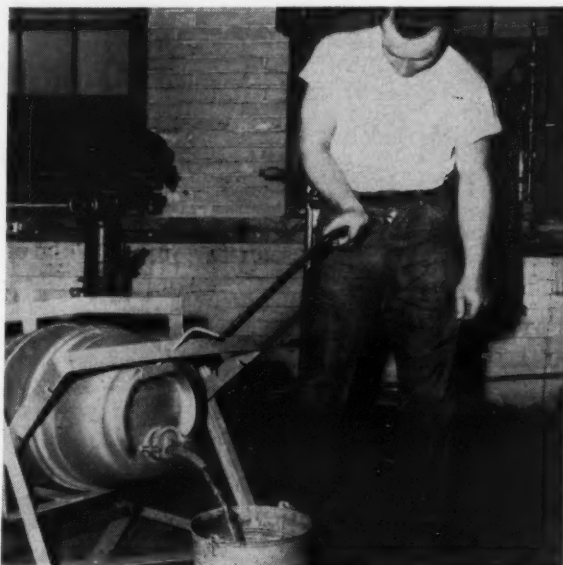
IDEAS

Safer, cleaner acid transfer with spout or pump . . .

flexible, acid resistant polyethylene tubing is used on each type of equipment

Pouring acids from carboys or barrels is safer, cleaner and easier with pouring spouts and acid pumps made with Bakelite polyethylene tubing. Steady, even flow from spout is assured by use of polyethylene air vent with the spout (as in photo). Flow capacity through this spout is as high as 5 gpm.

The pneumatic acid pumps (type in which a bulb is squeezed to build up displacing pressure in acid container) has flow capacity of about 2 gpm. Flow is stopped instantly by pressing an air relief valve. With this type of pump it is said to be impossible to build up dangerous air pressure inside glass containers.



Acid pouring spout has flexible, durable polyethylene tubing. Polyethylene-tube air vent assures smooth, steady flow

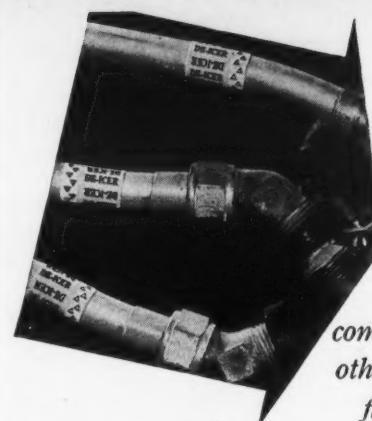
Bakelite polyethylene handles liquids such as carbon tetrachloride, 5% saturated phenol, oil or vitriol, xylene, glycerine, peroxide, and hydrofluoric, nitric, muriatic, citric, phosphoric, sulfuric and acetic acids. It is flexible. Extensions can be made by tubing which has threaded ends and joints.

(Spouts and acid pumps, made by Thompson Manufacturing Co., are available from Hanson-Van Winkle Munning Company, Dept. CP, Matawan, N. J. . . . or for more information check CP 8087 on handy form, pages 2 and 3.)

Converts atomic power directly into electricity using cell principle . . .

nuclear "battery" finds present use in simplified radiation instruments

The simple principle of the electrolytic cell has been extended to make possible derivation of electric power from atomic power in a single step. If two dissimilar metals are used to make a cell with a gas between them instead of a more usual electrolyte, an emf source is obtained. All that remains to be done to activate this cell is to irradiate the gas with nuclear radiation. Since this forcibly ionizes the gas, positive ions are attracted



new...
efficient
method of
marking
fuel, oil,
gas, hydraulic,
water, oxygen,
compressed gas and
other industrial
flow lines

Speed production, maintenance and repair operations with E-Z Code Fluid Line Markers. Extensively used in the aviation industry, E-Z Codes are now being used as flow-line markers in many industrial applications.

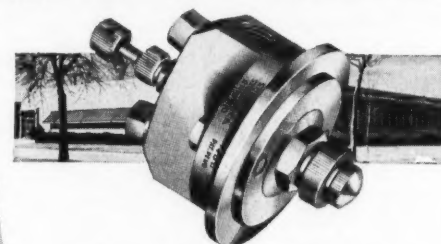
E-Z Codes are pressure-sensitive and are applied without moistening with fingertip pressure. They will not pop, peel or curl even in extreme changes of heat and humidity. They are available in standard symbols and codes for all types of flow-lines. They conform to the new international AND-10375 as well as AAF-27643 and can be produced to your size and printing specifications. Learn the facts on E-Z Code Fluid Line Markers.

SEND FOR SAMPLES AND DETAILS
E-Z CODE SELF-ADHESIVE
MARKERS

Western Lithograph Co. Dept. CP-12, 600 E. Second Street,
Los Angeles 54, Calif., Box 3804, St. Louis 22, Mo.

When inquiring check CP 8088 on handy form, pgs. 2-3

to the 99 plants in 100 who use SPRAY NOZZLES



WRITE
FOR

In the search for doing things better and faster, have you overlooked the importance of spray nozzles? Your application may be commonplace or complex . . . but whatever it is, properly engineered spray nozzles can make a vast difference. Let Spraying Systems Co., America's foremost authority on industrial spray nozzles show you why and how. As a first step, write for catalogs.

SPRAYING SYSTEMS CO.
Engineers and Manufacturers
3216 Randolph Street
Bellwood, Illinois

Catalog No. 22
General Industrial Spray Nozzles
Catalog No. 23
Pneumatic Atomizing Nozzles

When inquiring check CP 8089 on handy form, pgs. 2-3

CHEMICAL PROCESSING

to the noble electrode and negative ions to the active one, exactly as in the familiar electric battery.

This modification of the old principle has been put to work by The Ohmart Corporation of Cincinnati in a series of meters for radioactivity effects. When this cell is used as a primary sensing element, it produces energy to be used by the circuits of the instruments. Conventional instruments, in a sense, actually take energy from the measuring circuits. It is this difference which accounts for the unusual simplicity of these recently developed meters.

A series of several meters have been built for measurement of microcurie gamma sources and greater amounts. Some may also be used to survey ambient field intensity of 0.1 mr per hour and greater. Other types are specialized for use as dosimeters, water contamination monitors, and liquid level gauges. All of the instruments have two common characteristics: they use only one vacuum tube; and, they require no high voltage supply. Tests have shown that the cells suffer no loss of sensitivity with age.

Although these cells have been used to run a small "gnat power" motor, the present outlook does not seem to be toward their use as a practical power source. Typical current output of many of the instrument cells is in the micro-microampere range. Work to date, however, does point to extension of these instruments into fields of alloy analysis, gas analysis, and measurement of vacuum, pressure, and temperature.

(Further details are available from The Ohmart Corporation, Dept. CP, 2347 Ferguson Rd., Cincinnati 38, Ohio . . . or for more information check CP 8090 on handy form, pages 2 and 3.)

**Available as package unit,
accelerator produces
1 mm diam beam . . .**

ion accelerator can be operated in a room 12 feet wide by 18 feet long; uses 250 kv supply

Requiring no special building facilities, this Cockcroft-Walton-type particle accelerator operates at voltages up to 250,000 volts. Accelerating system is ten feet long and is mounted on a wheeled carriage for mobility. The radio-frequency ion source is designed to operate with hydrogen, deuterium, helium, argon or xenon.

The machine operates effectively at any voltage from 20 to 250 kv. All these high voltage components are immersed in oil. Power supply unit is equipped with safety interlocks and circuit protection. Another safety feature is the use of lucite rods at mechanical linkages, permitting beam focus and changes of various ion source settings while the high voltage is being applied. Focusing into beams as narrow as 1 mm diameter is possible, though beams of larger area with uniform current cross-section may be obtained.

Expected uses include neutron production, fostering of nuclear reactions, and scattering experiments. Equipment can be moved into any space of 12 x 18'.

Even though the equipment is mobile, light in weight, and compact, it is possible to obtain a 3×10^{-6} mm vacuum in operation. Vacuum system included in the unit produces a vacuum of 1×10^{-6} mm when beam is not used.

(Developed by American Instrument Co., Inc., Dept. CP, Silver Spring, Md. . . or for more information check CP 8091 on handy form, pages 2 and 3.)

DECEMBER, 1951

*A revolutionary new principle
in Coolers . . .*

**THE
holo-flite^{*} PROCESSOR**
(HOLLOW-FLITE)

Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as 1/5th the space of other heat exchangers . . . causes no dust, therefore requires no costly or complicated auxiliary recovery equipment . . . and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

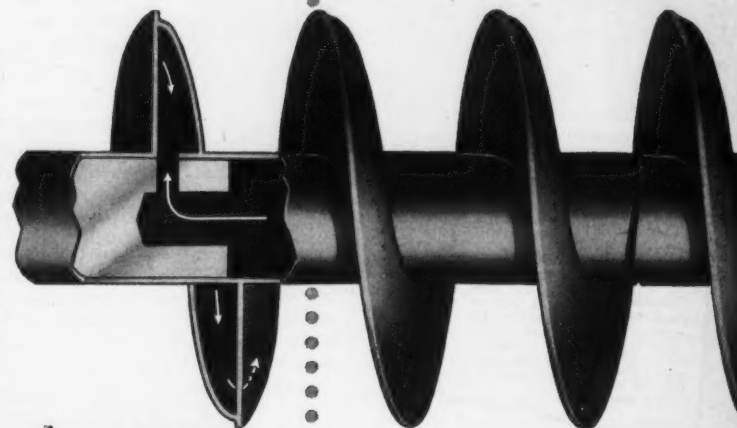
Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!

*Reg. T.M.

- ▶ Handles Pastes, Sludges or Solids!
- ▶ Up to 80% Saving in Space!
- ▶ Permits Continuous, High Efficiency Operation!



A FEW OF MANY HOLO-FLITE ADVANTAGES

WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

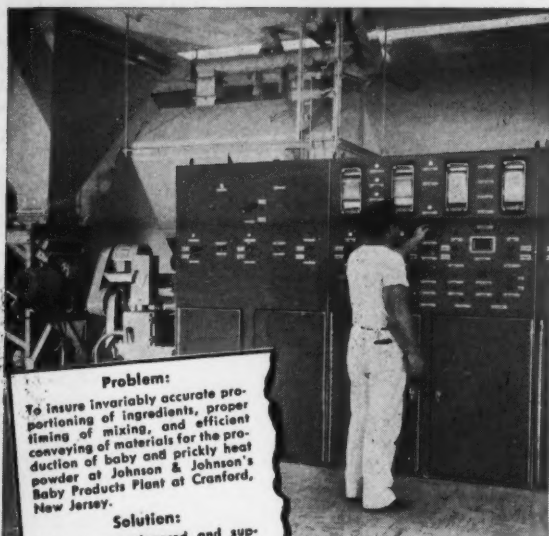
Write for full details on the many savings the HOLO-FLITE Processor can bring to your particular applications.

**WESTERN
Precipitation
CORPORATION**

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 8092 on handy form, pgs. 2-3



Problem:

To insure invariably accurate proportioning of ingredients, proper timing of mixing, and efficient conveying of materials for the production of baby and prickly heat powder at Johnson & Johnson's Baby Products Plant at Cranford, New Jersey.

Solution:

Richardson engineered and supplied automatic scales with a master control panel which coordinated the operation of the ordinated existing conveyors, scales, mixers and sifters. Result: A consistently uniform product for the filling machines.

RICHARDSON PROPORTIONING EQUIPMENT WORKS FOR Johnson & Johnson

A product like baby powder or prickly heat powder must be uniform—always. High customer acceptance depends on a product whose texture and composition remains the same month after month, year after year—the result of accurate blending. Making a profit or taking a loss because of high operating cost depends on rapid and accurate blending. That's why Johnson & Johnson called in Richardson to engineer a feeder—weigher—mixer system that would be fast—automatic—and ACCURATE.

Richardson has specialized in engineering and building systems for materials handling by weight for more than half a century. Through these years a tremendous backlog of practical experience has been built up. As a result, we maintain... and have proved time and again... that there's no problem in pre-weighing, proportioning and mixing materials that can't be solved efficiently and economically... that the uniformity of any end product can be consistently maintained without need for heavy capital investment. Why not ask a Richardson engineer to survey your plant and submit suggestions? To do so puts you under no obligation and may pave the way to increased production and profits at lower operating costs.

Richardson Scale Co., Clifton, New Jersey. Feeder—Weigher Systems of All Types: Automatic Bulk Weighing Hopper Scales, Including Conveyor-Feed Types—Continuous Feeder-Weighers—Automatic Bagging Scales—Bag-Sewing Conveyors—Packers—Process Control Panels. Branch offices in: Atlanta • Boston • Detroit • Minneapolis • Cincinnati • Wichita • Montreal • Omaha • New York • Pittsburgh • San Francisco • Toronto • Buffalo • Chicago Philadelphia • and Houston.

Richardson

MATERIALS HANDLING BY WEIGHT

When inquiring check CP 8093 on handy form, pgs. 2-3

IDEAS

Expansion joint insulating technique cuts duct maintenance...

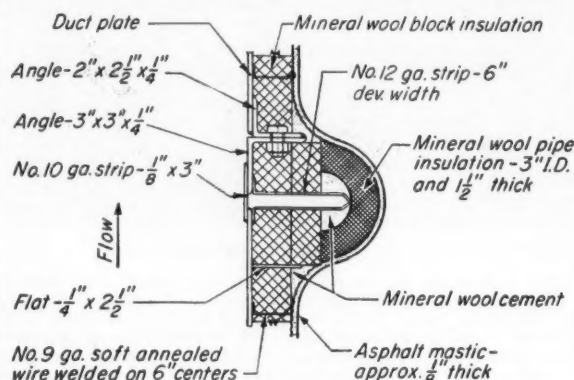
method eliminates special duct plate fabrication, and minimizes formation of surface cracks, hot spots

An unusual application of mineral wool pipe insulation has been developed by engineers of the Riley Stoker Corporation to insulate expansion joints on gas and air ducts. The technique eliminates the cost of special fabrication of the duct plate, and minimizes the possibility of surface cracks and hot spots.

In the drawing, a cross-section shows materials and construction of the expansion joints around the entire perimeter of the duct. The actual gap of the duct plate, about 4" wide, is covered by two angle irons, welded to one side of the duct plate. As the duct expands and contracts, sliding occurs between the top edge of the 10-gage strip and the 3 x 3 x 1/4" angle.

Gas-tightness is assured by continuous seal welding circumferentially around the entire duct at all points of attachment. Two 1/2" bolts secure the two angles together at 24" intervals except near the corners of the duct, where spacing is 3". Heart of the expansion joint is two 6" strips of 12-gage sheet metal which are formed and welded together at one end and, at the other end, to the respective edges of angle and duct at the expansion opening.

After all metal work at the joint has been completed, two sections of mineral wool block insulation are cut out to fit directly under the pipe insulation between the angle and the 1/4 x 2 1/2" flat. Thickness of the block

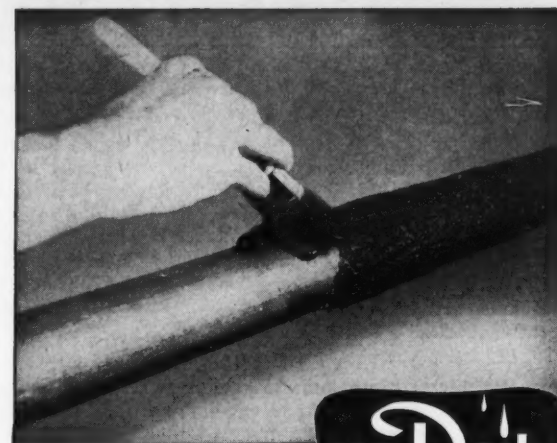


Illustrates technique of insulating expansion joints

insulation, both at the expansion joint and over the rest of the duct, depends on temperature of air or gas, and usually does not exceed 3". Molded type mineral wool pipe insulation, 3" ID and 1 1/2" thick, is filled with insulating cement and installed in 3' lengths around the duct.

Pipe insulation is secured in place by 1" galvanized wire mesh stretched over the insulation surface and wire-laced to 9-gage soft annealed wires welded to the duct plate on 6" centers. Adjacent block insulation is also secured by the welded wires, 14-gage lacing wire netting and 1" wire mesh. Insulation is finished with a 3/8" thick layer of mineral wool insulating cement and a 1/8" coat of asphalt mastic. Mastic may be sprayed with aluminum paint or any casein paint.

(Information courtesy of Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y.)



COVERS PIPES
TANKS, WALLS

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. STOPS CONDENSATION DRIP!



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDrip

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

J. W. MORTELL CO., 530 Burch St., Kenosha, Ill.

When inquiring check CP 8094 on handy form, pgs. 2-3



SAFE • STRONG • SECURE

Before specifying or purchasing open steel flooring check these exclusive features of Blaw-Knox Grating...

1. SAFETY underfoot at all times assured by twisted steel cross bars.
2. STRENGTH that only rigid "one-piece" Electroformed construction can provide.
3. SECURITY—no wobble, tilt or rattle caused by loose or lost screws, nuts, bolts.
4. EASY to maintain and paint... no sharp corners to clog with dirt.
5. MAXIMUM open area for light and air.

For complete data on Blaw-Knox Electroformed Steel Grating and Stair Treads write for Bulletin 2365.

BLAW-KNOX

Electroformed®
STEEL GRATING & STAIR TREADS

When inquiring check CP 8095 on handy form, pgs. 2-3

Spraying retards growth of lawn grasses; 2 mowings needed per season . . .

chemical can be formulated with 2,4-D killer to retard desired grasses, kill undesired weeds

Maleic hydrazide, a chemical that slows the growth of grass, may slash the annual cost of mowing the roadsides and center islands of local, state, and national highways, according to a report presented before the 37th annual meeting of the Association of State Highway Officials.

Unique property of the chemical was revealed by one of its developers, Dr. John W. Zukel of Naugatuck Chemical Division of the U. S. Rubber Company. Extensive experiments were conducted to determine the chemical's effectiveness with the objective of reducing the number of mechanical and hand mowings needed to keep landscaped areas in proper trim.

A total of 55 different plots comprising 74 acres was sprayed with maleic hydrazide. Most promising results were obtained on 12 one-acre plots in the center islands which were sprayed once with the chemical at the rate of 2 lb/acre. Maleic hydrazide slowed down the growth of lawn grasses in these test strips to a point where merely two mowings were needed throughout the spring and summer seasons. Adjacent untreated areas had to be mowed 19 times during this same season.

Cost of maleic hydrazide spraying of these center island plots was about \$10/acre. Based on the total labor and equipment costs for mowing the adjacent untreated sections, the chemical saved about \$70/acre for the season. Grass in the treated plots was equal in appearance to the mowed sections throughout the season, it is reported.

Tests found that the chemical could be formulated with 2,4-D weed-killer so that one spray would not only slow growth of the grasses, but would also kill off objectionable weeds.

Dr. Zukel reports that it is still too early to draw any overall conclusions during localized tests in one season. However, experiments will be extended to other localities for another season.

(Summary of information received from United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y.)

No need to partially empty drums of plastic compounds before tumbling . . .

stainless steel extension increases capacity of drum; avoids contamination of compound

It is no longer necessary to empty drums of Beetle and Melmac plastic compounds of part of their contents in order to tumble them. This is achieved by means of a small stainless steel drum extension designed to fit the top of "Leverpak-Fiber" drums M-4101-8D and M-4100-8D.

This saves time and eliminates the danger of contaminating the compound by exposure. Extension will fit a "Vol-U-Meter" drum tumbling machine 7587 A3. While this development is not on a commercial basis, details are available on request.

(Method is a development of American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y.)



AN ADVERTISING PAGE

by the HOUSE OF J. HAYDEN TWISS

A review of interesting products and services

NEW DYE STRIPPER PHENOMENAL

—Antara Chemicals, Division of General Dyestuff Corporation, is ready to go into commercial production on Peregene A—a new and amazingly effective stripping aid for vat, sulfur and direct dyeings. The bond of attraction between these dyes and Peregene is so strong that the affinity of the dislodged dye in the stripping bath is permanently shifted away from dyestuff on cotton to dyestuff on Peregene. Comparison tests indicate that in many cases the new stripper is ten times as effective as other agents considered excellent until now. Peregene A, described as a colloidal dye sequestering agent, stems from Antara's acetylene chemical program. Further details can be secured from the company at 435 Hudson Street, New York 14, N. Y.

ISCOLIZED GUMS—This proves the point that you can teach an old dog new tricks. The water soluble gums—Arabic, Karaya, Locust Bean, and Tragacanth, have been taught new tricks by ISCO. These gums are now processed so as to give them ready dispersion qualities. This enables the user to make up various solutions in a jiffy, eliminates presoaking, does not change the viscosity and the gum is accepted for food purposes. You can observe these quick results by asking Innis, Speiden & Co., Inc., 117 Liberty St., New York, for a sample of Iscolized Gum.

NUCHAR RECLAIMS CANDY TRIMMINGS

—Among the interesting applications for Nuchar—active carbon marketed by the Industrial Chemical Sales Division of West Virginia Pulp & Paper Co.—is the removal of color and flavor from candy trimmings, permitting their reuse as a neutral syrup in new candy batches. Hard candy, chocolate and starch candy trimmings may be so treated. Nuchar, of course, is also used as an adsorption purifier for sugars, fats and oils, alcoholic beverages, water, chemicals, pharmaceuticals, petroleum products, in air conditioning and the treatment of wastes. Further background on Nuchar applications can be secured by contacting the company at 230 Park Ave., N. Y. 17, N. Y.

HANDLING METALLIC SODIUM

—National Distillers Chemical Corp. has just issued the most complete booklet ever published on the safe handling of metallic sodium, from one pound bricks to 80,000 pound tank cars. It covers, in 24 pages, the properties of and commercial specifications on metallic sodium, shipping and handling methods, procedure for cleaning process equipment, safety precautions and first aid, plus a bibliography. The booklet, entitled "Handling Metallic Sodium," was prepared for users, prospective users, and those concerned with specifications or methods of shipping and handling. It is available on request from the company's Technical Service Department at Ash-tabula, Ohio.

LARGEST VACUUM FLASH-COOLING SYSTEM UNDER CONSTRUCTION

—The Croll-Reynolds Co., Inc., 17 John St., N. Y., manufacturers of Evactor steam jet vacuum equipment, is now building a 3000 ton capacity vacuum flash-cooling system for the Groton, Conn. plant of Charles Pfizer and Co. This will be one of the largest flash cooling systems ever installed. The cooling effect of this unit will be equal to the melting of 3000 tons of ice in 24 hours. The new unit, scheduled for installation some time in January, will be used, among other purposes, for the production of the vitally important antibiotic terramycin, available only from Pfizer.

NEW GAF POLYMER AVAILABLE

PVM/MA is another interesting material which has been added to General Aniline's growing list of acetylene derivatives. This linear polymer, consisting of alternating methyl vinyl ether and maleic anhydride units, is water-soluble over the entire pH range. It shows a high tolerance for most metal ions. In addition, it is soluble in many organic solvents, will react with alcohols and amines, and can be insolubilized by various means. PVM/MA's properties suggest its use in adhesives, binders, ceramics, coatings, detergents, emulsions, latex, leather, paper, textiles, and thickeners. New Product Bulletin No. P-103 describing this material is available from the Product Development Dept., General Aniline & Film Corp., 22 Center Square, Easton, Pa.

COMBATING MAGNESIUM FIRES

Stauffer Chemical Company is enthusiastic about the success of their Boron Trichloride for controlling magnesium fires in heat-treating, pre-heating and annealing furnaces. At the present time, the method is recommended only for comparatively tight batch-type furnaces or ovens heated by electrical resistors or radiant tubes with forced circulation. The Boron Trichloride gas is fed into the furnace from a 50 pound cylinder through a pipe opening welded into the furnace door. Magnesium processors agree it is the best material which has been found for the purpose. For further information, write to Stauffer, 420 Lexington Ave., New York 17, New York.

WARFARIN DOOMS RATS

—There are as many rats as people in the United States today. Within 15 days, they could be an extinct species. The magical poison, of course, is warfarin—The odorless, tasteless anticoagulant which causes death by internal hemorrhage after repeated consumption over a period of days. Prentiss Drug & Chemical Co., Inc., 110 William St., N. Y.—which markets warfarin concentrates to manufacturers and repackers of rodenticides for compounding with bait and/or resale under their own brand names—has just published a comprehensive booklet on action, advantages and methods of application of this fabulous rat-killer. Copies are available on request.

SOLID ALKYLAMINES

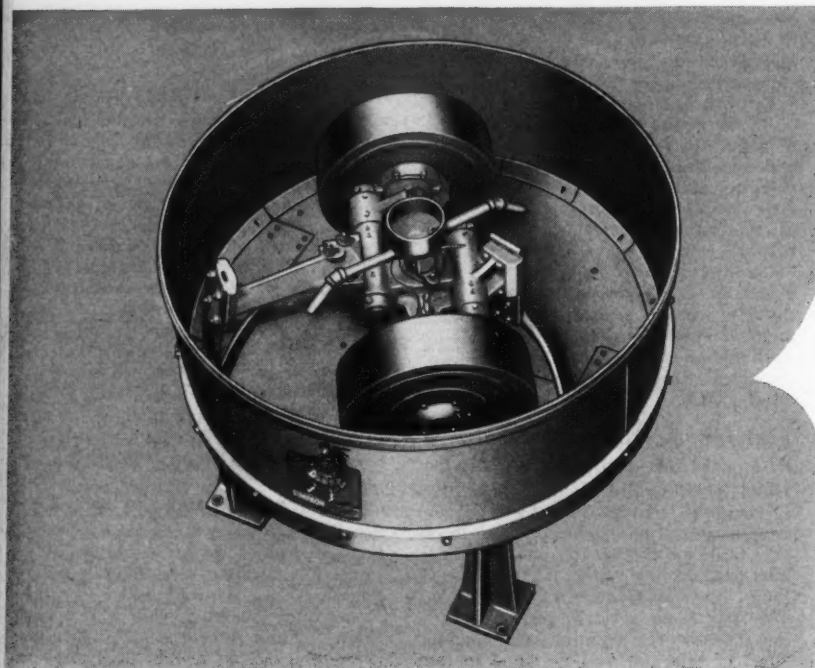
—Amines are usually supplied as dilute aqueous solutions or as gases. Now Chemo Puro Mfg. Corp. has made available in tonnage quantities the Hydrochlorides of pure Mono and Dimethyl and Mono and Diethyl Amines. These are colorless crystalline salts of 99 plus % purity for which new uses are being sought—and found. Diethylamine HCl and Monomethylamine HCl are ingredients of high-quality special duty solders and fluxes because these salts yield hydrochloric acid without leaving any other residue, the amine being evaporated under the influence of heat. A request to Chemo Puro at 26-32 Skillman Ave., Long Island City, N. Y., will bring you a sample of the Amine Hydrochloride which may be the answer to your processing problem.

"WHAT'S NEW" is prepared by the staff of The House of J. Hayden Twiss as a cooperative service for its clients. The product developments and expansion programs reported here reflect the progressiveness of our clients whose advertising we strive to make technically informative, editorially interesting and psychologically persuasive. If further information is desired, please address your inquiry to "What's New" Editor, The House of J. Hayden Twiss, New York Central Building, 225 Park Avenue, New York 17, N. Y. ©

Here's how many

CHEMICAL PROCESS INDUSTRIES

PREPARE FOR GREATER OUTPUT



IN preparing dry, semi-dry, or pasty materials to meet today's demand for greater output — the speed — the accuracy — and the economy of Simpson Mix-Mullers is essential.

Ten high capacity models ranging from 1/10 to 30 cu. ft. have been engineered to accommodate almost every production schedule. Though vastly different in size and type of installation—each of these Simpson Mix-Mullers incorporates the *same true mulling principle* so necessary wherever accurate—controlled mixing and blending is required.

Let a National Engineer show you how Simpson Intensive Mix-Mullers, together with National Bucket Loaders and other auxiliary handling equipment, can do a better, faster job of increasing production at lower cost. Write for details.



SIMPSON Mix-Muller® Division

NATIONAL ENGINEERING CO. 604 Machinery Hall Bldg. Chicago 6, Ill.



When inquiring check CP 8097 on handy form, pgs. 2-3

Partial List of Products Prepared with Simpson Intensive Mix-Mullers

ABRASIVES
ASPHALT TILES
ARTIFICIAL STONES
BOILER COMPOUNDS
BATTERY PASTES
CATALYSTS
CLAYS
CERAMIC TILES
CEREAL BINDERS
CRAYON STOCKS
CRUCIBLES
CARBON ELECTRODES
CONCRETE PIPE
DRY COLORS
DINNERWARE
ENAMEL FRIT
ELECTRICAL PORCELAIN
FERTILIZER
FOUNDRY SAND
FIRE BRICK
GRAPHITE PRODUCTS
INSECTICIDES
INSULATORS
LUTING MUD
POTTERY
PAINT PASTES
PLASTICS
PHARMACEUTICALS
POWDERED METALS
PUTTIES
PENCIL LEADS
PORCELAIN
PAPER COATINGS
REFRACTORIES
REFRACTORY CEMENT
SOAP PRODUCTS
STEATITE
SILICONE CARBIDE
SANITARY WARES
TERRA COTTA
WATER SOFTENERS
WHITEWARE
ZINC BLENDS

IDEAS

TV tubes are cleaned, etched in polyethylene tub . . .

acid washtub weighs 60% less than one of metal, should last eight times as long

Glass television tubes are cleaned and etched in strong acids in a 69½" diam, 27" high tub made of Bakelite polyethylene plastic. The 487-lb tub weighs about 60% less than a comparable tub made of metal, and is expected to last at least eight times as long in service.



Now in use at National Video Corporation, of Chicago, the washtub was made by welding together ½" thick sheets by the hot-gas method.

The center interior tube was hand-formed and welded of ½" polyethylene sheet; four other interior tubes, each 12½" diam, were cast from Bakelite polyethylene resins to ⅜" wall thickness. Same processes used in making the tub turn out manufacturer's well-known polyethylene bottles, jars and safety jugs.

(Manufactured by American Agile Corporation, Dept. CP, 5806 Hough Ave., Cleveland 3, Ohio.)

NBS-developed ceramic coatings increase service life of high temp alloys . . .

uncoated alloys in exhaust systems suffer mostly from the chemical action of hot corrosive gases

Recently developed ceramic coatings by the National Bureau of Standards have been found to increase appreciably the service life of high temperature alloys, particularly in the exhaust systems of aircraft. Ceramic coatings are applied to heat-resistant alloys for protection against such deterioration as scaling and intergranular corrosion. Uncoated alloys suffer mostly from the chemical action of hot corrosive gases — especially oxygen, lead bromide, sulfur compounds and hydrocarbons. The erosive effect of gases impinging at high velocity on alloys seems to be a contributing factor in certain types of service.

NBS coating A-417 is the most successful development thus far. It is composed of a high barium, alkali-free frit (glass) with a 30% admixture of chromic oxide. The coating is applied in the form of a water suspension or "slip" which must be adjusted to the proper specific gravity in order to obtain uniformity. The wet coating is dried and then fired by heating it to 1850°F in a furnace for 3 to 10 minutes. A smooth, green-colored finish in thicknesses between 0.001 and 0.002 inch is

CHEMICAL PROCESSING

obtained. Thus far the coating has been used with Inconel and 19-9DL.

Metallographic examination of test specimens shows that the A-417 coating retards carbon absorption from exhaust gases of high fuel-air, ratios, corrosion from lead compounds present in the exhaust stream, and oxidation of exterior surfaces in contact with the air. At the same time, A-417 coatings have good resistance to high-temperature flow; have high resistance to thermal shock; adhere well, even after long testing at temperatures up to 1650°F; and cover edges and welds effectively.

For over a year, Inconel heat exchangers used in the exhaust system of a large bomber to supply heated air for de-icing have been A-417 coated in regular production.

(Complete information contained in Technical Report 1581, National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

**Phytic acid stabilizes edible oils,
opens door to new uses
for these products . . .**

present commercial source is corn steep liquor, from which it is precipitated by the addition of lime

Phytic acid (inositol-hexaphosphoric acid), a natural constituent of cereal grains and oilseeds, has been shown to be highly effective in the control of metallic contamination in edible oils. The stability and field of usefulness of such oils as soybean, cottonseed, corn and peanut can thereby be enhanced. Although it is present in many foods and occurs naturally as the mixed calcium, magnesium and potassium salt in all cereal and oil seeds, actual use of phytic acid in refining edible oils must wait for toxicological studies now under way.

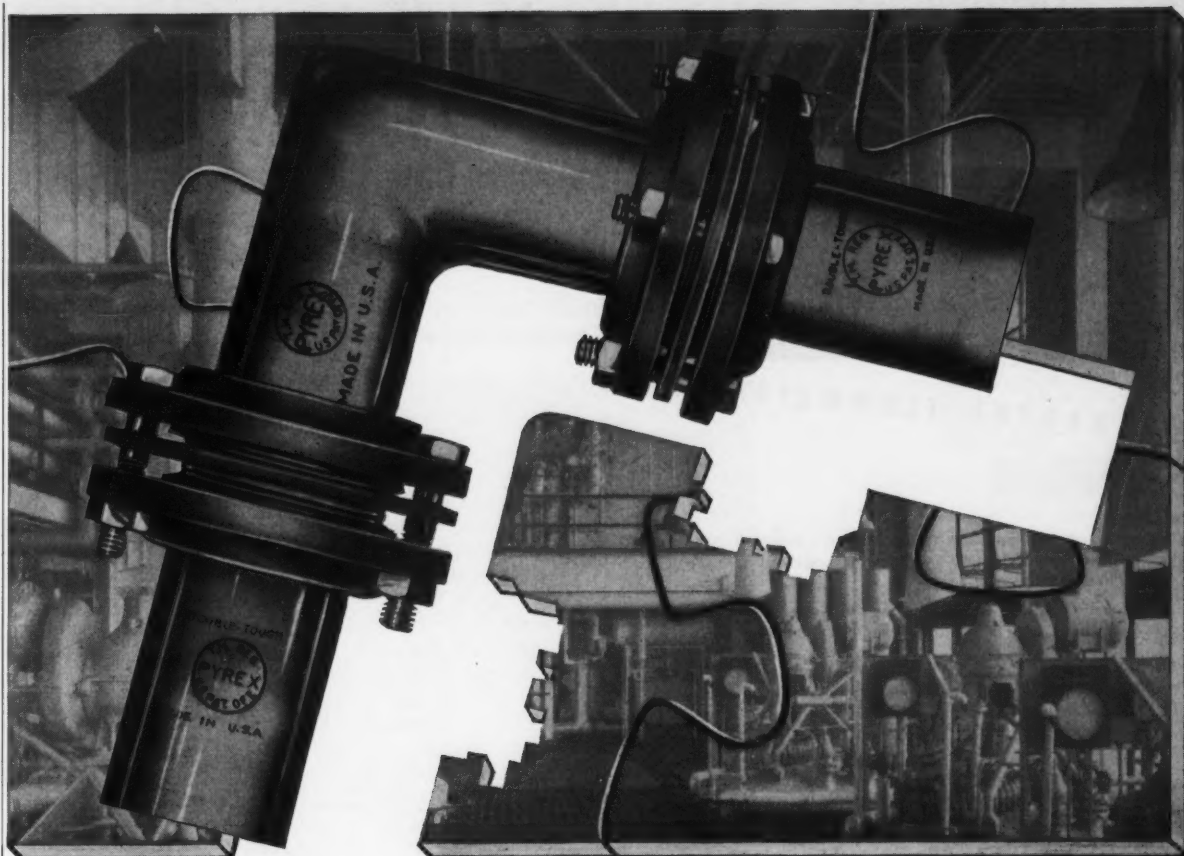
Pending approval, as regards toxicity, preliminary investigations indicate that deodorizing hydrogenated products with phytic acid would tend to increase their stability. Thus the storage life of products made from them would likewise be increased.

Experimental evidence shows that when phytic acid in a 0.01% concentration is added during regular processing of edible oils, they demonstrate a marked improvement in their oxidative stability. A further advantage is that phytic acid remains active after passing through a deodorization cycle, and it is not necessary to make additions after cooling.

Corn steep liquor, from which phytic acid is precipitated by the addition of lime, is the present commercial source. In the laboratory, crude phytic acid can be prepared by dissolving the commercial phytin in 6% HCl. The solution is diluted to reduce the concentration of HCl to 1 or 2%, then filtered and demineralized by use of an ion exchange resin such as Dowex 50. Subsequent removal of HCl is accomplished by one or two vacuum evaporations.

In the cereal grains, phytin occurs in the highest concentration in the bran coat. Some other plant materials containing phytin include: rice bran and oat "flour", which actually is the finely ground bran coat and not the starchy part of the kernel; wheat bran; rye bran; and, the various oilseeds.

(Summarized from paper presented at the Spring, 1951 meeting of the American Oil Chemists' Society on "The Flavor Problem of Soybean Oil. XI. Phytic Acid as a Metal-Inactivating Agent," by C. D. Evans, Patricia M. Cooney, Helen A. Moser, and A. W. Schwab, Northern Regional Research Laboratory, Peoria, Ill.)



Fit PYREX Brand GLASS PIPE into your processing plans—*and save money!*

- Stops pipeline corrosion
- Helps you spot trouble
- Costs less to install and maintain

You can save thousands of dollars in chemical processing costs with PYREX Brand "Double-Tough" Glass Pipe. Its exceptional resistance to hot or cold acids, acid salts, mild alkalis and other corrosive liquids assures positive protection against pipe corrosion. Its high chemical stability also insures against product contamination.

Its visibility means fewer production shut downs and less product waste. You can spot sedimentation, crystallization or discoloration at a glance . . . correct it before real harm is done. Trouble can't hide behind glass.

PYREX brand glass pipe costs less right down the line. Its initial cost is reasonable. Its light weight and ease in plumbing keep installation costs low and its corrosion resistance makes replacement costs negligible.

Whenever you are faced with the problem of transferring a corrosive liquid or a product sensitive to contamination, it will pay you to look at PYREX brand glass pipe. It's safe, efficient, economical and *available* without priority through nation wide distributors. For complete information, mail the coupon below today.



CORNING GLASS WORKS

CORNING, NEW YORK

Corning means research in Glass

1851 • 100 YEARS OF MAKING GLASS BETTER AND MORE USEFUL • 1951

Technical Products Division: Laboratory Glassware, Signalware, Glass Pipe, Gauge Glasses, Lightingware, Optical Glass, Glass Components

CORNING GLASS WORKS, Dept. CP-12, Corning, N. Y.
Please send me your new Pyrex Brand "Double-Tough" Glass Pipe Catalog.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 8098 on handy form, pgs. 2-3

OVER-RANGING

will
not
damage

BARTON FLOWMETERS!

here's proof...

A user reports this test made on a BARTON Flowmeter with a 25" W.C. differential range at a pressure level of 1200 psi:

A 300 psi over-range pressure was alternately applied in the normal direction and then in the reverse direction approximately 20 times a minute, continuously—day and night—for three weeks! At the conclusion of the test—after more than one-half million differential over-ranges in each direction—the instrument was checked for zero and calibration; it had changed less than one per cent! AND no maintenance or parts replacement was required!

less maintenance

ALL MAJOR SOURCES OF TROUBLE inherent in other differential-pressure meters ARE ELIMINATED IN BARTON Rupture-Proof FLOWMETERS!

NO LIQUID SEALS TO LOSE—corrosive and volatile liquids are handled without seal pots, thus reducing installation and upkeep costs.

NO MERCURY USED—hence, no costly losses due to leakage or theft, and no contamination of liquid being handled. Likewise, installation can be made without accurate leveling.

EASY TO OPERATE—Unskilled personnel can put a BARTON in operation without danger of damage to the meter.

CLEANING ISN'T NEEDED—a BARTON drains or vents itself completely. No pockets to trap condensates. No floats, chains, or links to corrode. Assures permanent positive accuracy.

plus value features

- ♦ Rupture-proof Stainless Steel Bellows.
- ♦ Torque-tube Drive—no pressure bearings.
- ♦ Pulsation Damper—externally adjustable.

for measuring

FLOW • LIQUID LEVEL • DIFFERENTIAL PRESSURE

WRITE FOR DETAILS IN BULLETIN 11C4 TODAY!

BARTON
INSTRUMENT CORPORATION

1437 SO. EASTERN AVE., LOS ANGELES 22, CALIF.

When inquiring check CP 8099 on handy form, pgs. 2-3

Page 60

Versatile Weighing Element Can Be Used as Basis for Many Control Systems

Process
Instrumentation

Exact air pressure
needed to balance load
is sent on to operate
batch indicators, or con-
tinuous controllers

Uses: Variety of pneumatic weight transmitters are available as basic elements in batch or continuous systems. They translate weight (actually force) into a pneumatic signal which is linear and accurate to 0.1% of full scale.

Features: Since the output of the device is in air pressure to start with, transmitter can be built into existing pneumatic control systems, or designed into systems using standard components.

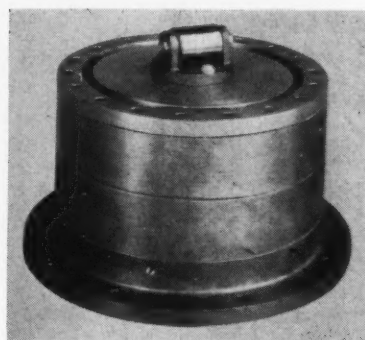
Description: Transmitter is designed on the force balance principle. Air admitted on one side of diaphragm is brought to the exact pressure needed to balance force of the load which bears on diaphragm's other side. No knife edges, pivots or bearings are employed.

Actually two transmitters are built into the same housing. One may be conveniently used for tare weight so that the other gives an exact net weight. Since the tare balance diaphragm is centrally loaded and air supported, sensitivity of net weight measurement is not affected by any load carried on the tare system but remains constant at about 1/5000 of full scale load. Further advantages of the transmitter are these facts: the moving parts are totally enclosed, thus protected from dust, dirt, corrosive atmosphere and weather; rubbing or rolling parts involving friction are eliminated. Diaphragm movement from no load to full load is actually less than one hundredth of an inch.

In order to reduce bouncing or oscillations from sudden loading, a damping chamber and pin-hole orifice are also part of the design. Damped air flow from net weight chamber to damping chamber, and back, steady the reading when sudden load changes are made.

Cutaway drawing indicates how these three sections are located in the transmitter. At bottom is the net weight chamber with its bleed nozzle, air supply and signal outlet. When transmitter is loaded, bleed nozzle is closed by downward deflection of the diaphragms until sufficient air pressure has been reached to balance load. Damping chamber is directly above net weight chamber with damping orifice on left side. Tare weight chamber, at top, is pressured through a remote tare control valve — tare weight allowance is thus completely independent of load or net weight.

Adaptation of this device for simple and batch weighing is obvious. Recalibrated pressure gauge indicates the weight.

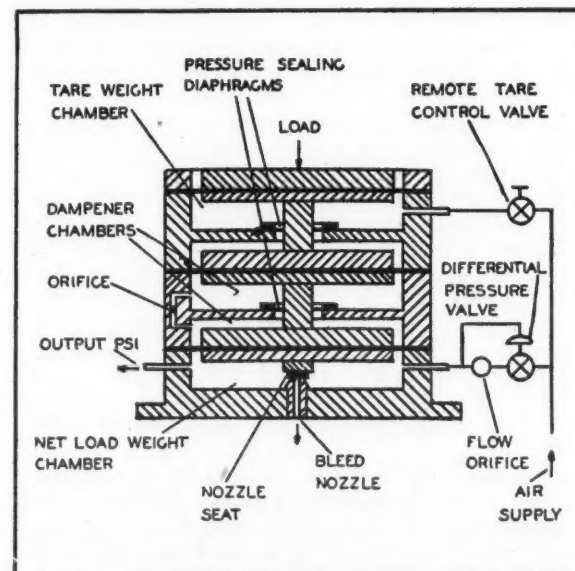


All transmitters are totally enclosed

A typical continuous weighing, or rate controlling system is shown schematically. In this case solids delivered from a bin by a vibrating feeder load a section of endless belt. Use of one fixed (fulcrum), support and weight transmitter as the other support reflects rate changes to a pneumatic control system. Final control element, of course, is the vibrator.

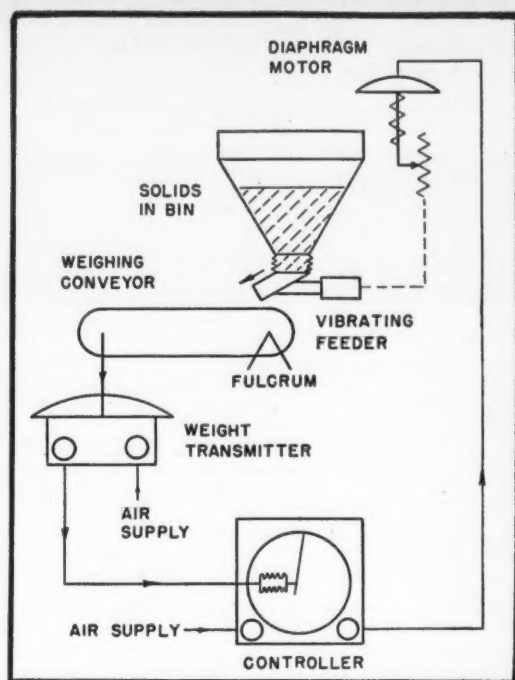
Another system, for continuous or batch weighing, is suggested by the use of a hopper supported at two points. Again, one point is a fixed or fulcrum point, the other a transmitter. For batch weighing either manual or automatic shut-off can be arranged. For continuous weighing, a slide valve or rotary feeder can be used as final control element. Latter system is kept in balance by employing a weigh-hopper opening of the right size to keep hopper filled to approximately the same level at the rate desired.

Transmitter is made in 23 sizes with diaphragm areas from 4 to 465 sq in. Additional chambers for special tare arrangements, right angle pick ups, accessories,



Chambers and design shown in sectional view

CHEMICAL PROCESSING



Transmitter may be used in controlled rate flow of solids. This is one of many systems which can make use of pneumatic weight control

etc., are available. Body is cast from iron alloy, load plates are aluminum alloy, and the diaphragms are nylon-coated Buna S.

(Equipment and engineering service is offered by John R. Monsell, Manufacturing Engineer, Dept. CP, Pitman, N. J. . . . or for more information check CP 8100 on handy form, pages 2 and 3.)

Potentiometer handles signals down to 0.000001 v DC . . .

range of 0.1 to 100 microvolts is useful for pyrometry, differential temperature, and other fine measurements

Uses: Potentiometer is suitable for fine measurements where sensing element produces voltages ranging from 0.1 to 100 microvolts. This includes voltage measurements, differential temperature measurements, small object temperature through radiation pyrometry, and other high resolution measurements.

Description: This null-point instrument can be used with indicators or recorders. It does not include primary sensing element, being suitable for connection to sources of voltage within its range.

(Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . . or for more information check CP 8101 on handy form, pgs. 2-3)

Strain gauge folder shows fluid pressure use

Four-page bulletin describes an adaptation of the SR-4 strain gauge for measuring fluid pressure in oil lines, process steps, etc. Low current, low voltage is used and fire and explosion hazards are reported to be eliminated. "SR-4 Fluid Pressure System" is issued by Testing Equipment Dept., Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 8102 on handy form, pages 2 and 3.

DECEMBER, 1951

BECKMAN—the leading name in pH—presents
another important advancement in instrumentation

Announcing The **BECKMAN** **MODEL N** pH METER

Completely Portable!
Extremely Compact!
...and Really Rugged!



In the constantly expanding field of pH, there is wide demand for a completely portable battery-operated pH instrument that is low in price, light in weight, compact in size, and amply rugged to be used anywhere—in the orchard, in the oilfields, in textile mills, plating shops, mining and mill operations, food processing plants, laboratories . . . anywhere, without dependence upon outside power circuits.

The newly developed Beckman Model N pH Meter not only meets all these requirements, but also many more. Here are the highlights. Check them over. *Never before have unique advantages like these been combined into a single pH instrument!*

OPERATING SIMPLICITY AND ACCURACY . . .

- ▶ Accuracy to better than 0.05 pH.
- ▶ Low operating cost—less than 2c per hour.
- ▶ Built-in temperature compensation—0° to 100° C.
- ▶ Fast warm-up—less than 10 seconds.
- ▶ "Check Pointer" eliminates need for frequent buffer standardization.
- ▶ Batteries are easily checked with the regular panel controls—no need to disassemble the instrument. Clip-mounting of batteries eliminates need for soldering or wiring.

NEW COMPACTNESS AND RUGGEDNESS . . .

- ▶ All-metal case—cast aluminum with baked enamel finish to resist wear and corrosion.
- ▶ Splash-proof design—fully desiccated internally.
- ▶ Shock-proof—each tube is individually shock-mounted.
- ▶ Light weight—less than 8 lbs., complete.
- ▶ Small, compact—only 4" x 6" x 9½" overall.
- ▶ Equipped with the new Beckman Red Label Glass Electrode—virtually unbreakable, covers almost the entire pH range, usable from freezing to boiling.
- ▶ By far the most rugged overall construction of any pH meter.

GET ALL THE FACTS on this newest Beckman advancement in pH by contacting your nearest authorized Beckman instrument dealer. Or write direct!

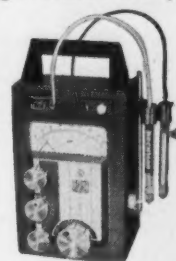
BECKMAN
INSTRUMENTS
INC.

SOUTH PASADENA 11, CALIFORNIA
Factory Service Branches: Chicago — New York — Los Angeles
Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Automatic Titrators — Radioactivity Meters — and Special Instruments

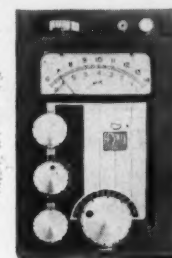
When inquiring check CP 8103 on handy form, pgs. 2-3

NEW CONVENIENCE
SIMPLICITY
RUGGEDNESS

make the Beckman Model N a noteworthy advancement. The following features are typical . . .



ELECTRODE SUPPORT ROTATES alongside case for maximum convenience in carrying. Instrument can be used in either horizontal position (shown at left) or vertical position (above)—whichever is handier.



CONVENIENT CONTROLS not only centralize all operating functions, but also permit checking amplifier circuits and battery condition without opening case or disturbing battery connections.



RUGGED, COMPACT DESIGN withstands rough field and plant service with negligible maintenance. Solid cast-aluminum case is strong, yet light in weight. Beckman Glass Electrode is virtually unbreakable!

There are many other important features designed into the Model N. Be sure to get the complete story on this new Beckman development!

MERIAM

WELL TYPE MANOMETERS



SAVE ADDITION

SAVE TIME

PREVENT ERROR

These manometers are *direct reading*. They save time — no additions. Likewise, prevent error. This greater ease and speed in reading have made them very popular throughout industry—in both plant and laboratory.

In the illustration the manometers measure the upstream pressure at the orifice plates in gas and air lines leading to equipment under test. At test stations in this plant they also measure the pressure of gas and air for test units.

Other industrial uses are for measuring vacuum pressures in tanks, setting gas pilots, reading pressures at blowers. In testing laboratories they are extensively used in measuring the pressure and vacuum of practically all kinds of liquids and gases. Complete information on request.

THE MERIAM INSTRUMENT CO.
10940 MADISON AVENUE • CLEVELAND 2, OHIO
WESTERN DIVISION: 4760 E. OLYMPIC BLVD., LOS ANGELES 22, CALIF.
IN CANADA: PEACOCK BROS., LTD., MONTREAL

MERIAM ★
Instruments
★ ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 8104 on handy form, pgs. 2-3

Page 62

PROCESS INSTRUMENTATION

Use of flame source makes spectrometer even faster in determinations . . .

high light output of flame gives good sensitivity, although flame is not limited to dilute solutions

Uses: Quantitative determinations of over 40 elements including heavy metals, rare earths and the alkali metals. Instrument can be used with dilute concentrated or almost saturated solutions. Sodium, potassium, calcium, and magnesium, for example, can be determined directly from a sample of blood plasma without any special preparation.

Features: Since the high light output of the flame provides ample sensitivity, very narrow bands widths can be used. This results in high selectivity as well. Yet, tests are made so quickly that six samples per minute can be run on a fixed wavelength.

Detection limits illustrate the high sensitivity — typical cases are: sodium, 0.01 ppm; calcium, 0.1 ppm; magnesium, 1.0 ppm. Analytical accuracy of 0.2% is obtainable with many elements.

Description: Two units are available. Model DU Flame Spectrophotometer and a Flame Attachment (Model B), which converts the Model B Spectrophotometer to an instrument comparable to the Model DU.

In operation, sample for analysis is drawn up through a palladium capillary of the atomizer-burner. Aspirating action of the gas jet sprays it directly into the hot, compact flame where spectral lines of the elements are excited. A condensing mirror is used to send the light to spectrometer.

Flame is maintained steady by being housed in an acoustic, cast-metal cabinet. Gas pressure gauges, mounted on auxiliary panel (shown above the unit), make reproducible setting of flame possible. This allows the flame attachment



Model B spectrophotometer with flame attachment

to be run in a stand-by condition between samples and cuts gas consumption. In normal operation fuel rate is about 8 cu ft/hr of oxygen and 5 cu ft/hr acetylene or 20 cu ft/hr of hydrogen. Flame housing embodies a simple positioner for sample which makes possible the use of samples as small as 1/2 ml. Ordinarily a 1 to 3 ml sample is used, however.

ADVERTISEMENT

Plastic coated instrument tubing resists external corrosion . . .

Withstands fumes from acids and alkalis and exposure to moisture, salt air, oils and grease.



Dekoron tubing still in good condition after 2 1/2 years' exposure to deposits high in hydrochloric acid. Copper was destroyed in 18 months.

Uses: Dekoron instrument tubing has numerous applications in the chemical processing field as an economical substitute for copper and expensive alloy tubing. It outlasts ordinary metal tubing many times.

Features: Dekoron tubing consists of a tough, light, flexible armor of protective plastic extruded by a patented process over metal tubing of any kind. It is easily handled and fabricated without special tools.

Description: The plastic used in Dekoron coating is selected according to corrosive atmospheres to which the tubing may be subjected. It is impact and abrasion-resistant. Sizes range upward from about 1/8 inch OD, and standard fittings covered with corrosion-resistant plastic tape are used at tubing joints. Dekoron instrument tubing can be supplied complete with steel tubing or as an extrusion service using customers' tubing of steel, aluminum or copper.

Source: Dekoron instrument tubing is manufactured by Samuel Moore & Company, Mantua, Ohio — or for more information check CP 8105 on handy form, between pages 2 and 3.

ADVERTISEMENT

When inquiring check CP 8105 on handy form, pgs. 2-3

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Brookfield ENGINEERING LABORATORIES, INC.
210 Porter St., Stoughton, Mass.

When inquiring check CP 8106 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

Flame itself is intensely hot. Iron wire is instantly disintegrated in it. Housing and chimney (shown at right) protect operator from getting too close to it in operation.

(Instruments are manufactured by Beckman Instruments, Inc., Dept. CP, South Pasadena, Calif. . . or for more information check CP 8107 on handy form, pages 2 & 3.)

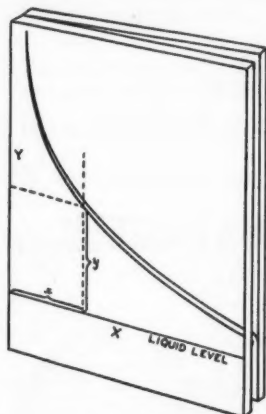
Rugged instrument overcomes difficulties of checking surface tension . . .

having accuracy of better than 5%, checker indicates any error in reading due to improper cleaning

Uses: For checking surface tension in process control of electroplating, dyeing, or any step where this variable is important.

Features: Instrument is rugged enough for production use. It can be used by untrained operators, since it immediately indicates improper cleaning and its use in production routine requires no calculations.

Description: Two glass plates set at a slight angle to each other will draw up any liquid which wets them as shown in the illustration. This principle is used by the Sur-Ten Meter to quickly evaluate surface tension. Height to which the liquid will rise depends on specific gravity and surface tension.



Rise of liquid between glass plates is an index of surface tension

The Sur-Ten Meter is made of two 5 x 7" sheets of glass, one of which is printed in a ceramic enamel with a vertical millimeter scale corresponding to the vertical dotted line in the illustration. Clamps, a permanently mounted stainless steel wedge, and positioners are included with the meter to insure a reproducible angle. To use the device, it is disassembled and inner surfaces are swabbed with alkaline cleaning solution. After rins-

ing with water, the surfaces are swabbed with the solution to be tested. Then, by immersing the meter to the horizontal line which is the base of the scale, a reading may be taken in about 30 sec.

This reading in millimeters rise can be used as an index and compared to the optimum rise for the process step involved. For finding the actual surface tension, the reading can be multiplied by a constant and the specific gravity of the solution as read on a hydrometer at the same time. It takes less than five minutes to find the surface tension with an accuracy of 5% or better.

If inner surfaces of the device are improperly cleaned, noticeable irregularities in the curve show the location of any residual dirt. With good cleaning and careful technique, the instrument is accurate to about 2%. Usual range is 0 to 100 dynes/cm, but special ranges are available.

(Developed by Joseph B. Kushner School of Electroplating, Dept. CP, 115 Broad St., Stroudsburg, Pa. . . or for more information check CP 8108 on handy form, pages 2 & 3.)



Commemorating our 60th Anniversary

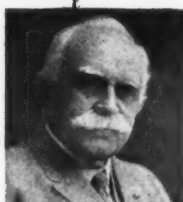
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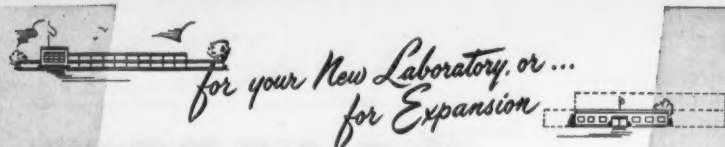


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When inquiring check CP 8109 on handy form, pgs. 2-3



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What's A "New Solution"?

It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

PROCESS INSTRUMENTATION

**Reduces panel space
required for voltage
regulator . . .**

7 x 10 1/8" unit handles 438 kva
at 3600 rpm

Uses: Primarily, this unit is a rocking contact voltage regulator for AC generators, but it may also be used to control speed, tension, or current.

Features: Capable of handling 438 kva at 3600 rpm, the regulator requires a panel space of only 7 x 10 1/8".

Description: Two types of rocking contact regulator of the same physical dimensions are available. Type V-00 has 34 steps and handles 157 kva at 3600 rpm; type 221, 50 steps, handling 438 kva at that speed.

Tendency of the line to fluctuate is used to actuate a solenoid-dashpot combination. The position of the solenoid core governs point of contact between carbon contact rim and the sections representing steps. This point selects the resistance of the generator's exciter shunt field circuit, and so brings the voltage back to pre-set level.

Bearings of the mechanical end are jewels. Two voltage adjustments are incorporated: one is set at factory; the other allows voltage to be held at 10 per cent on either side of normal generator voltage.

Designed for semi-flush mounting, the regulator is dust-proof and has all moving parts totally enclosed.

(Designed and built by Allis-Chalmers Manufacturing Co., Dept. CP, 1114 S. 70th Street, Milwaukee, Wis. . . . or for more information check CP 8111 on handy form, pages 2 and 3.)

**Has 3 time constants
for various levels
of accuracy . . .**

Geiger counter is built for use alone or with recorder

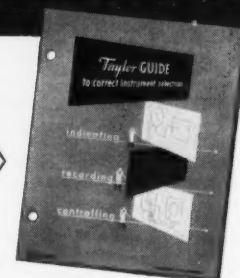
Uses: As well as handling conventional counting jobs, this monitor is equipped for attachment to vacuum lines, can catch bench top radiation, or can be put to clinical use.

Features: Switch selects response time, giving choice of 2, 5, or 15% statistical accuracy. Probe is equipped with magnet for attaching it to iron or steel surfaces.

Description: Model 1615A, known as the "Radiation Sentinel", is a five range radiation monitor with

CAN'T FIND THE RIGHT INSTRUMENT?

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Here is a basic guide to all of Taylor's conventional instruments for indicating, recording and controlling almost any process variable: temperature, pressure, humidity, flow, liquid level, load, speed and density. A special section discusses special function instruments such as time-schedule, pneumatic set, etc.

Keep it handy as a reference whenever you're considering instrumentation. Write for Bulletin 98170, Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

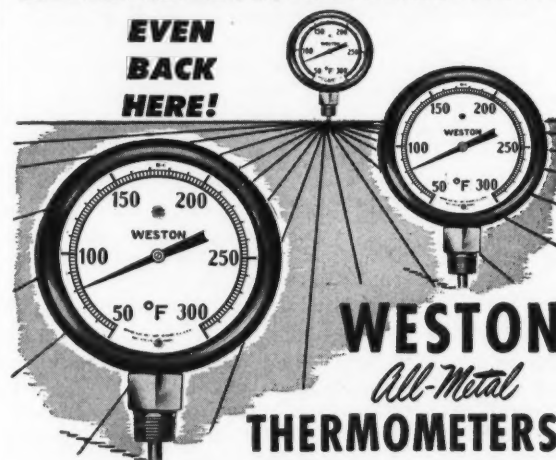
Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

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When inquiring check CP 8112 on handy form, pgs. 2-3

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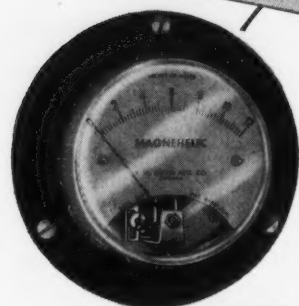
Seconds count when things go wrong . . . wherever temperatures are critical. And not even a split-second is lost in reading temperatures accurately, when the thermometers are WESTON. Their large, boldly marked faces are readable, even from a distance. And the rugged, all-metal construction of WESTON bi-metal thermometers assures dependable, trouble-free operation. Available in types, sizes and stem lengths for most industrial applications. Write for bulletin T-13, Weston Electrical Instrument Corporation, 585 Frelinghuysen Avenue, Newark 5, N. J. . . . manufacturers of Weston and Tagliabue Instruments.

WESTON *Instruments*

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When inquiring check CP 8114 on handy form, pgs. 2-3

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- ★ This low-cost protection gives permanent proof of temperature behavior.
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Send for new catalog G-143-B, describing many styles of Auto-Lite temperature indicators and recorders.

Model "500"

Temperature Recorder with capillary tubing for EYE-LEVEL reading.
Priced from \$42.50.

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TEMPERATURE RECORDERS & INDICATORS

When inquiring check CP 8115 on handy form, pgs. 2-3

DECEMBER, 1951

PROCESS INSTRUMENTATION

maximum scale ratings from 500 to 50,000 counts per minute. These are shown on a four-inch meter. Monitor features its own built-in power supply and provides a switch for controlling chart drive of a recorder if this is used with the equipment. Pilot light arrangement shows both the status of the monitor and the recorder, if used.

Probe is mica window type and magnetic mounting is a permanent feature. Lead sheathing can be supplied for the probe for applications where this is needed.

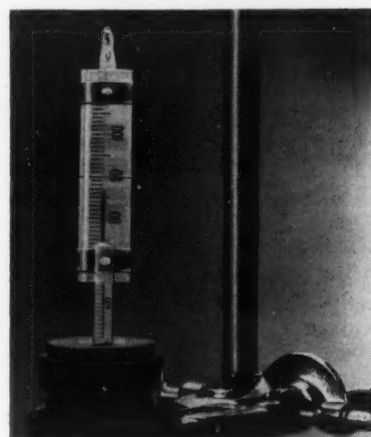
(Product of Nuclear Instrument & Chemical Corporation, Dept. CP, 229 W. Erie St., Chicago, Ill. . . or for more information check CP 8116 on handy form, pages 2 and 3.)

Allows operator to read glass thermometers from 6 feet . . .

plastic magnifier snaps on and can be positioned to needed range

Uses: By magnifying the thermometer scale and mercury line, this plastic device makes an ordinary thermometer readable from six feet away.

Features: It snaps onto any standard thermometer and can be posi-



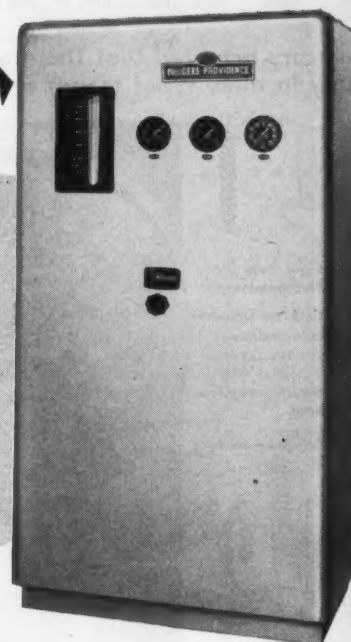
tioned on the scale to cover the range where needed.

Description: Made of clear polished plastic, the Fisher Thermometer Magnifier is equipped with two spring clips which hold it to any standard thermometer. Center of the two-inch magnified section is marked by a hair-line which can be used as a reference point.

(Handled exclusively by Fisher Scientific Company, Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 8117 on handy form, pages 2 and 3.)

THE RIGHT CHLORINE GAS FEEDER FOR YOUR PLANT . . .

It's **BUILDERS** Visible Flow **CHLORINIZER Model HCVS** — the modern feeder for chlorinating cooling water to condensers and heat exchangers.



Model HCVS is the up-to-date feeder from every point of view:



LOOK AT IT from the angle of *dependability* and you'll find a design that assures long life and low maintenance. This feeder handles chlorine gas in the dry, non-corrosive state. Double-durability is assured by the materials used in the chlorine flow system, all able to withstand even corrosive moist chlorine. Vital control parts are extremely simple and free from mechanisms which need frequent attention. Foolproof protective devices assure absolutely safe operation under all conditions.



LOOK AT IT from the *operating* point of view and you'll find equally important advantages: a Sightflo indicator that gives you a true picture of actual flow (accurate within $\pm 4\%$) — a dependable system for controlling the rate of chlorine feed by varying water or air pressure — unitized construction that can be easily understood by any competent mechanic.



LOOK AT IT from the *adaptability* angle. No other chlorine feeder is so easy to change for capacity or for type of control. Model HCVS is ready-built for proportional control; for start-stop operation; or for multiple control for dosing several points with the same feeder, simultaneously or in sequence. It holds its vacuum . . . resumes chlorine feed instantly at the start of each dosing period.



BUILDERS Visible Flow **CHLORINIZERS** are available in three volumetric models — for any chlorination service:

Up to 400 lbs./day	Model DV5X	Bulletin 840-F2A
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For Bulletins, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, R. I.

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When inquiring check CP 8118 on handy form, pgs. 2-3

PALMER

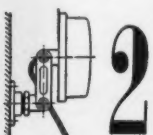
mercury actuated Dial Thermometers
now in three types to suit any requirements



1

Rigid Stem Dial Thermometer

Rigid stem tapered bulb, interchangeable with standard industrial thermometer separable socket.



2

Wall Mounted Dial Thermometer

Wall mounted dial thermometer with flexible connecting arm. Case adjustable to easy reading position.

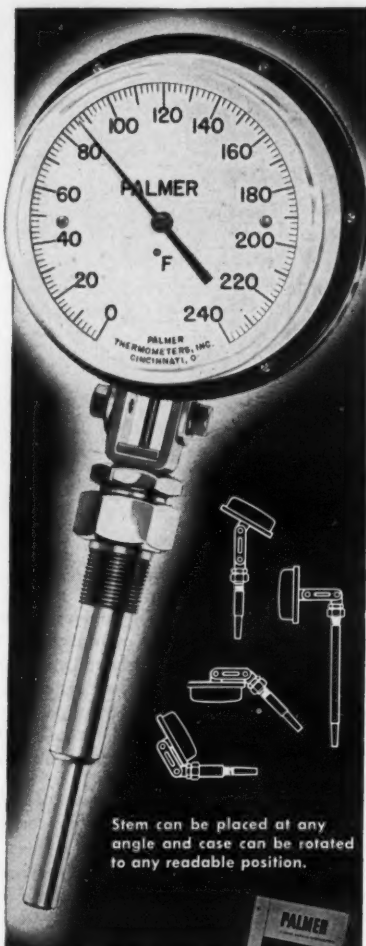


3

Flush Mounted Dial Thermometer

Flush mounted style for panel mounting with flexible connecting arm.

All three types have a full 4 1/2" dial face



Stem can be placed at any angle and case can be rotated to any readable position.

SEND FOR THIS BULLETIN
For details on the New Palmer Dial Thermometer, please write for Palmer Bulletin 51-129.

PROCESS INSTRUMENTATION

Functional design of meter speeds pH checks anywhere . . .

battery power and carrying case make it easy to take meter to the job

Uses: On-the-spot checks of pH in the field, plant, or process. Unit is portable.

Features: Attractive, functional design of cabinet makes quick manipulation possible. Operator's right hand is free for handling samples.

Description: Model N pH Meter retains the earlier electronic circuit of the model M and H-2 pH meter. Relocation of the control knobs and cast aluminum case



Meter weighs 8 lb

are the chief differences. Standardization point can be noted with adjustable pointer, and battery checks can be made with the meter itself.

Electrode support rod is pivot-mounted so that the meter can be used in a horizontal position, as shown, or standing upright. Quick-check accuracy remains 0.1 pH unit with a limiting accuracy of about 0.03.

Compact unit weighs only 8 lb and is 4 x 6 x 9 1/2". Tubes are individually mounted against shock. Warm up, under battery power, is about 10 seconds.

(Developed by Beckman Instruments, Inc., Dept. CP, South Pasadena, Calif. . . or for more information check CP 8120 on handy form, pages 2 and 3.)

Differential pressure range from 0.001 to 2.0" water used by flowmeter . . .

thermopile manometer instrument allows this performance without much drag in line

Uses: Can be used as an indicator, or as sensing device for a recorder in instrumentation of very small flow rates. In conjunction with an orifice and by-pass, it measures flow at high rates.

Features: Meter is so sensitive that its two scales

6 to 1

ONE Indicator Plug
Connects to any of
SIX Thermocouple Jacks

MULTI-POINT PYROMETER INDICATOR



**Accurate
Sturdy**

Indicates temperatures of various applications.

Stocked in five temperature ranges.

Polarized Jacks and Plugs of thermocouple materials.

Instrument compensated automatically for cold junction temperature changes and instrument temperature resistance coefficient.

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When inquiring check CP 8121 on handy form, pgs. 2-3

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FLOATLESS CONTROL FIELD



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CHEMICAL PROCESSING

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Mfrs. of Industrial Laboratory
Recording and Dial Thermometers
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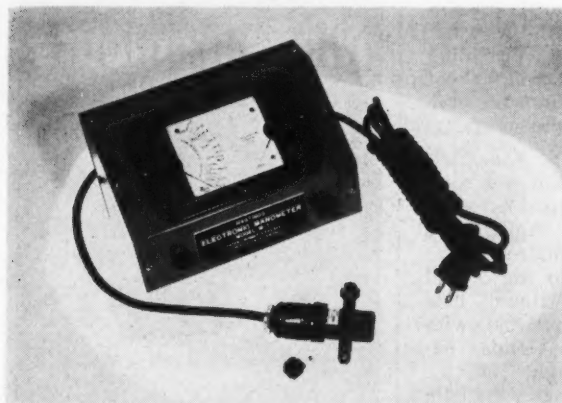
When inquiring check CP 8119 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

range from 0.001 to 0.1 and 0.1 to 2.0" of water (differential pressure).

Description: The noble metal thermopile principle is used in this Electronic Manometer. Rate at which flowing liquid carries off heat is the action on which measurement is based. Installation and operation of the instrument, however, are much simpler than with home-made gadgets of the same general type.

Two taps on the gauge tube are connected to the points across which differential pressure is to be measured. Or, when used simply as a flowmeter, the tube can be



Indicator is connected to gauge tube by electrical cable

placed directly in the line. If flow rates are higher than the range of the instrument when used directly in the line, sensing tube may be placed in a by-pass around a calibrated orifice. Calibration and accuracy are not affected when long cables are used from the gauge tube to the meter, so that the installation can easily be used in a remote system. Gauge tubes can be left in the line as permanent parts of the system, since they are not damaged by high pressure and they cause only a negligible pressure drop themselves.

If desired, a selector switch may be used to read from up to five of the gauge tubes permanently installed in lines.

Power supply for the instrument is standard 110 v, 60 cps. A constant voltage transformer is available to eliminate any effect due to line variation.

(This thermopile instrument was developed by Hastings Instrument Company, Inc., Dept. CP, Super Highway and Pine Ave., Hampton 10, Va. . . . or for more information check CP 8123 on handy form, pages 2 and 3.)

All about patents in non-technical terms

"Patents for Technical Personnel" is a 44-page handbook that simply and accurately discusses what a patent is, the steps which must be taken to protect an invention, interference and prosecution of patents, and a typical patent department of a company showing its relation to the inventor and employee.

Last chapter presents a systematic method for analyzing and checking claims and tells how to read a patent. A 4-page pictorial section follows an invention from idea through patent. Remit \$3 direct to Chemonomics, Inc., Dept. CP, 400 Madison Ave., New York 17, N. Y. When inquiring specify CP 8124 on handy form, pages 2 and 3.

DECEMBER, 1951

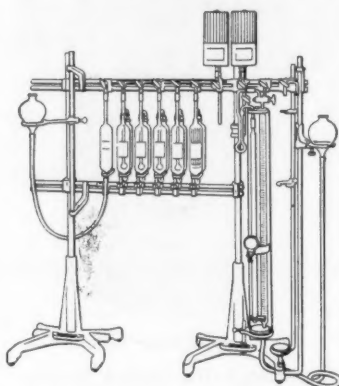
FOR SCIENTISTS EVERYWHERE

GAS ANALYSIS

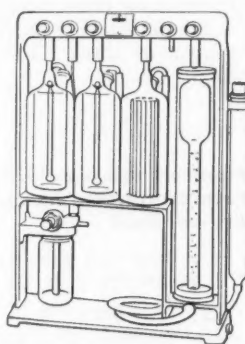
APPARATUS

by **BURRELL**

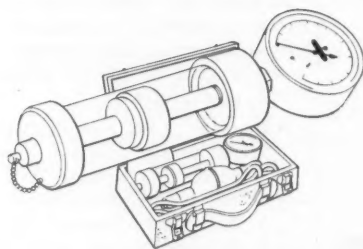
Your needs have impelled Burrell to pioneer in the field of gas analysis down through the years. Many "firsts" and "exclusives" in both construction of apparatus and methods of procedure have resulted. Typical Burrell exclusives are Catalytic Combustion for greater speed, safety and accuracy, and Perma-Therm heating for constant, automatic, temperature control. Of particular interest to scientists everywhere is the versatility of types and models offered. You select from the most complete assortment of gas analysis apparatus available. All of your needs can be met.



THE BURRELL DE LUXE MODEL J, pictured, is one of the most frequently specified types of gas analysis apparatus. Designed for adaptability and efficiency in the laboratory, any simple or complex mixture may be handled with speed and accuracy. Because all of the necessary equipment for all the commonly used methods is incorporated, the analyst needs only to select the method best suited to the gas sample. This versatile Burrell gas analyzer is delivered with all needed equipment and accessories for prompt operation. For more detailed information about this and other models, write for Burrell Catalog 80, which contains a helpful Manual for Gas Analysts.



THE BURRELL INDUSTRO GAS ANALYZERS are compact, portable and easily operated units for the industrial gas analyst. Designed for on-the-job use, these "Industros" are rugged and trouble-free. The frame is all metal and there are no glass stopcocks to handle with care. Model B (shown), is used for mixtures such as flue gases where determination of carbon dioxide, oxygen, and carbon monoxide is desired. Model C offers added facilities for more complicated mixtures. For detailed information about these efficient Burrell Industro Gas Analyzers, ask for Bulletin No. 313.



THE BURRELL CO₂ INDICATOR is a necessity for all combustion engineers. By measuring the CO₂ content and the temperature of the chimney gas, amount of heat loss can readily be determined. The Burrell CO₂ Indicator is light and sturdy with an easy-to-read scale. No installation or time consuming preparations are needed—a small hole in the stack makes immediate testing possible. A complete kit includes all accessories and instructions for use. Ask for Burrell Bulletin No. 206.



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MANUFACTURERS AND DISTRIBUTORS OF SCIENTIFIC APPARATUS AND LABORATORY CHEMICALS

When inquiring check CP 8125 on handy form, pgs. 2-3



Bulletin 8210

General Purpose Control Valves

- ★ Full Port Area—Packless
- ★ For Air, Gas, Water, Brine, Freon, Methyl Chloride, Light Oil and other Liquids and Gases up to 212°F; Pressures up to 400 pounds
- ★ Several Auxiliary Variations
- ★ Several Sizes: 1/8 to 2 1/2 inches

Our Bulletin 8210 Solenoid Valves are designed for those shut-off requirements where a simple, rugged, automatic control will serve. They close instantly when current to the coil is cut off. Full line pressure on top of the valve piston aided by a powerful spring assures tight closing. They reopen fully when the coil energy is restored.

Bulletin 8211 Valves are similar except that they have Explosion-Proof Solenoids approved by Underwriters' Inc., Class 1, Group D, Hazardous Location.



If you have any automatic control problems that fit into the above class, study fully the merits of Asco Bulletin 8210 and 8211 Solenoid Valves. Write us anyway, regardless of your problems, because we have many other types of solenoid valves.

When in need of Electromagnetic Controls, come to us.

Automatic Switch Co.

379 Lakeside Avenue

Orange, New Jersey

When inquiring check CP 8126 on handy form, pgs. 2-3

a NEW concept in pH measurement

SINGLE CONTROL OPERATION—All adjustments of standardization and measurement are made with a single calibrated dial.

FLASHING SIGNAL—Potentiometric balance is indicated by a unique "flashing signal." No meters to read; no pointers to set.

LONG LIFE BATTERIES—1200 hours of operation . . . universally available . . . easy to install.

NO DESICCANTS—Measuring circuits electrically protected from moisture or corrosion.

NO "HIDDEN ERRORS"—Complete protection against measurement errors resulting from depleted batteries, amplifier drift, or accidental disturbance of controls.

SCREW BASE ELECTRODES . . . mounted in the exclusive Coleman sealed-head insure precision and safety. Electrodes are automatically brought to working position or safely stored by opening or closing the instrument cover.

COLEMAN COMPAX

pH ELECTROMETER

for full details ask for Bulletin DB-225

NEW ACCURACY NEW DEPENDABILITY
NEW SIMPLICITY NEW ECONOMY

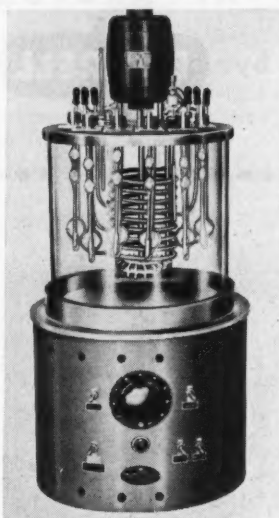
COLEMAN INSTRUMENTS 210 MADISON ST. MAYWOOD, ILLINOIS

When inquiring check CP 8127 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Improved agitation is featured in temp bath . . .

turbine type impeller, well below water level, provides adequate circulation without surface disturbance



Viscosimeter bath

through its frosted bottom. Capillary tubes may be inserted into chuck-like holders, reducing breakage and offering added safety to the operator.

(Product of Emil Greiner Company, Dept. CP, 20-26 N. Moore Street, New York 13, N. Y. . . . or or more information check CP 8128 on handy form, pages 2 and 3.)

Monitors temperature at 270 spots, recording those which exceed pre-set limit . . .

system will also record all points, record selected points, or scan all points without recording

Uses: Temperature scanning system is especially useful in steam generating plants, fractionation and refining units, temperature control of drying towers, viscose baths, and many other cases. An interesting application is in the spinning of synthetic yarn. Unless filaments are extruded at the proper temperature, defective material is produced which does not show up as faulty until after dyeing. Here the scanning system can be used on all 18 spinnerettes of several machines used in a process.

Features: Four modes of operation are possible:

1. All points scanned, temperature recorded when in excess of set point.
2. All points continuously recorded.
3. All points scanned but no record made.
4. Selected points continuously recorded.

Description: Basically, the system is made up of a recorder, rectifier, control unit, audible and visual alarms, and manual controls. Up to 270 points are handled by the scanning system in banks of nine points each. Indicator lamps identify bank and point being checked. When average difference between reading of successive points is less than 25% of full scale, system is reported to check about one point per second.

RESIST CORROSION in Liquid Volume Measurements



with

NIAGARA STAINLESS STEEL METERS

• Your problems of metering corrosive liquids are probably solved with Niagara Chemical Meters. Built of type 316 stainless steel, they measure with the same accuracy as the standard bronze meters, best-known in industry for many years. They are simple, practical, reliable . . . Investigate today!

Please send me complete details on the uses Niagara Chemical Meters offer me for:

Liquid

Temp.°F Pressure.....p.s.i.

Flow rate g.p.m.

Company

By

Address

BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N. Y.

When inquiring check CP 8129 on handy form, pgs. 2-3

CHEMICAL PROCESSING

If synchronism between scanning and printing should be lost during manual manipulation, it is automatically restored. Loss of synchronism does not occur during normal automatic operation since stepping relays selecting points to be checked are driven by the printing wheel. Alarms do not interrupt scanning either, and may be reset by manual control.

Recorder is a 12-point electronic null-point type and has an incorporated print holdout to prevent printing except where temperature exceeds the pre-set value. This print holdout can be switched out of the circuit, of course, when continuous recording is desired. When set to record only excessive temperature, the alarm is sounded at the same time printing begins.

(Made by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 8130 on handy form, pages 2 and 3.)



Controlled variables brought rapidly to stable condition . . .

applicable to control of flow, liquid level, as well as pressure

Uses: Non-indicating, force-balance controller for applications where it is desirable to transmit the measured variable to some remote location. Particularly adaptable to flow, liquid level, or pressure applications requiring fast reset rates and broad throttling bands, or where derivative action is not essential.

Component part of maker's 3-part Transet control system, which includes this unit, Transaire transmitters, and the miniature Transet recorder for graphic panel installations.



Non-indicating, force-balance controller

Features: One-knob adjusts both proportional and automatic reset responses so that processes can be brought to a stable condition easily.

Description: Transet Bi-Act controller measures $7\frac{1}{2}$ " overall length and has a range of adjustment of 1 to 200 % throttling range and automatic reset of 0 to 100 repeats per minute. It is available with or without manifold bracket.

Instrument is a companion to the Transet Tri-Act controller. Improvements of the Bi-Act include simplified control circuit pneumatically linking proportional and automatic reset responses together; easily changed control action without disturbing piping; plug-in, leakless manifold for connecting or removing controller; fast control action due to large capacity booster air relay; and, built-in cut-off relay so unit may be either panel or field mounted.

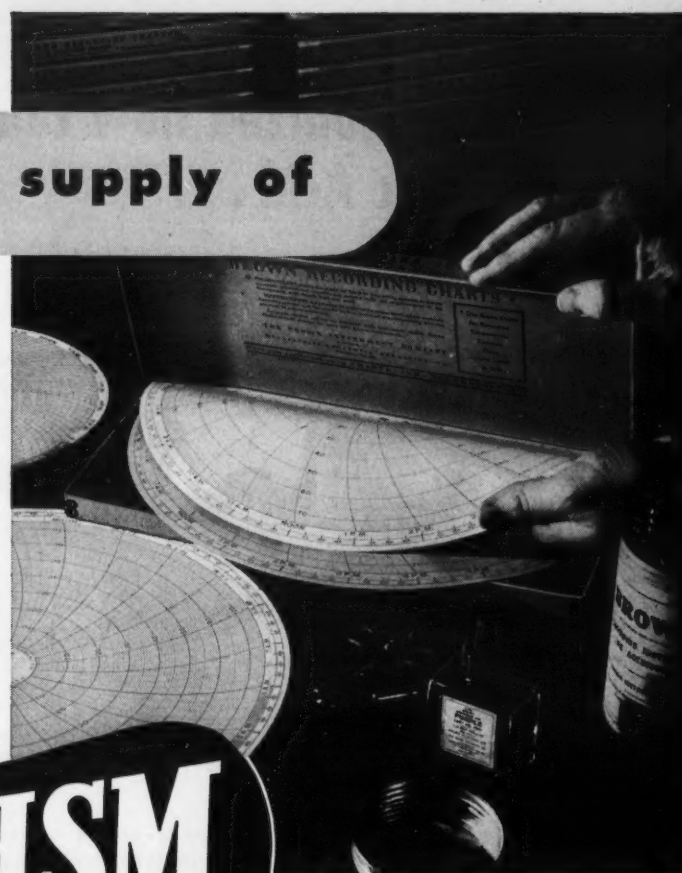
(Announced by Taylor Instrument Companies, Dept. CP, 95 Ames Street, Rochester 1, New York . . . or for more information check CP 8131 on handy form, pages 2 and 3.)

Order

a continuous supply of

ACCURATE CHARTS

for your Brown Instruments



. . . through your Honeywell Supplies Man

WISE buyers benefit from the provisions of the HSM Plan for all instrument accessories.

In the case of charts, the benefit is two-fold. (1) A continuous supply of charts means greater recording accuracy . . . eliminates the opportunity for damage and shrinkage from humidity changes during long storage of large stocks. (2) Planned and scheduled purchasing, under a blanket agreement, adds convenience and saves money. Both are available to you through your local Honeywell

Supplies Man . . . gone are the days of confused specifying and hopeful waiting for delivery.

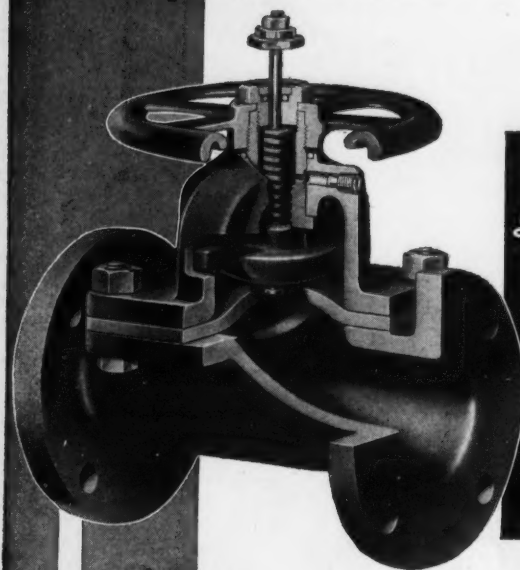
Call in your Honeywell Supplies Man for a discussion of your chart needs and all your instrument accessories . . . he is as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR Co., Industrial Division, 4421 Wayne Ave., Philadelphia 44, Pa. Offices in more than 80 principal cities of the United States, Canada and throughout the world.

MINNEAPOLIS
Honeywell
Brown Instruments

When inquiring check CP 8132 on handy form, pgs. 2-3

Here is the valve
that revolutionized flow control
of Sulphuric Acid...



HILLS-McCANN
Saunders Patent
DIAPHRAGM
VALVE
with L-1
PLASTIC
DIAPHRAGM

Sulphuric acid up to 66° Bé can now be valved without leakage, dripping or sticking... with Hills-McCanna Diaphragm Valves equipped with the new L-1 plastic diaphragms. This new development combines the tried and proved Saunders Patent pinch clamp principle with a diaphragm of a special type of plastic that is particularly resistant to concentrated sulphuric acid.

Hills-McCanna Diaphragm Valves with L-1 diaphragms are suitable for temperatures up to 125° F. and pressures up to 100 psi. Sizes from 1/2" thru 4" are available, handwheel operated, quick opening (lever operated) and sliding stem models. Choice of nearly 50 body materials or linings including cast iron, cast steel, Durimet or glass lined.

Literature is available describing Hills-McCanna Valves with data on their use for acid and other services. Write for your copy outlining the nature of your application. **HILLS-McCANN COMPANY, 2370 W. Nelson St., Chicago 18, Ill.**

The valve illustrated in cut-a-way above is the Hills-McCanna Model 8600 semi-sealed bonnet acid valve with L-1 plastic diaphragm and tell-tale travel stop indicator. Valves of this type can be furnished where particularly rigid safety precautions must be taken.

HILLS-McCANN CO.

saunders patent

diaphragm valves

Also manufacturers of — Proportioning Pumps
Force-Feed Lubricators • Magnesium Alloy Castings

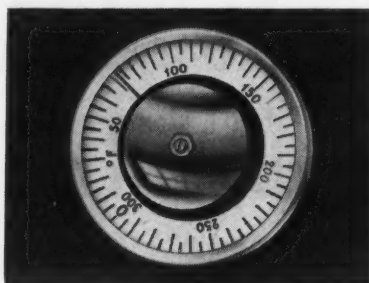
When inquiring check CP 8133 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Gives reading of temp
for surface it is
stuck to...**

one direction sensitivity and
small size mark this thermometer

Uses: Fact that it measures temperature of the surface makes this thermometer handy for checking molds and dies, outside of pipe, wall and floor temperature of buildings. It is especially well suited for tests of wall leakage of refrigeration



Can be stuck to almost any surface
for temperature checks to 300°F

equipment. It is also a handy trouble shooting device for bearings, electric motors, cylinder blocks, etc.

Features: Only 2" in diameter, the thermometer is light enough to be held with its magnetic clamp to the location being tested. For use with non-ferrous materials, a silicone grease is used as adhesive.

Description: Both silicone grease and magnetic clamp are supplied with the Model 310 Surface Temperature Thermometer for sticking it in place. Temperature readings in the range from 0 to 300°F are made on the tested surface. A polished reflecting surface on the dial front keeps radiation from leaking in or out, so that temperature error due to surroundings is minimized.

Silicone grease does not melt and can hold this one ounce indicator throughout its entire temperature range.

(This unique instrument is being produced by Pacific Transducer Company, Dept. CP, 11921 W. Pico Blvd., Los Angeles 64, Calif. . . or for more information check CP 8134 on handy form, pages 2 and 3.)

**1200 amp shunts
are 2 1/2 x 4 1/2"**

Uses: Shunts for electrical current instruments.

Description: Three sizes of electrical shunts are available for currents from 30 to 1200 amps. In all, 14 current capacities are offered. Physically small, the shunts range in

For quick, accurate

**CHECK
ON PROCESS
GASES**

USE RANAREX

Whenever the specific gravity of a gas is a guide to a chemical reaction or process, Ranarex can be used to indicate, record or control it. Find out now how this accurate, low-cost instrument can help you!

Write to The Permutit Company, Dept. CP 12, 330 West 42nd St., New York 18, N. Y.



RANAREX
PRODUCT OF THE PERMUTIT CO.

When inquiring check CP 8135 on handy form, pgs. 2-3

**FOR GAUGING LIQUIDS
OF ALL KINDS**
• 100% AUTOMATIC
• APPROVED BY
UNDERWRITERS'
LABORATORIES

LIQUIDOMETER

**"LIQUIDS WORTH STORING
ARE WORTH MEASURING"
WITH A
LIQUIDOMETER
Tank Gauge**

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 8136 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Heating Safety Protects YOUR Investment

Alnor Type 5200 Pyrotac
excess temperature cut-off.

The Alnor Pyrotac excess temperature cut-off offers you low-cost, automatic protection against damage due to excessive temperatures . . . safeguards your investment in heating equipment and materials in process.

Simple in operation, the Pyrotac constantly indicates temperature of the heater equipment and stands ready to sound an alarm and/or shut down heater circuits at a pre-set maximum safe temperature. Available in scale ranges from 0°-600° F. to 0°-3000° F. and Centigrade equivalents.

An Alnor quality instrument, featuring laboratory precision and husky construction.

WRITE FOR BULLETIN

Illinois Testing Laboratories, Inc.
Room 504, 420 N. La Salle Street
Chicago 10, Illinois

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 8137 on handy form, pgs. 2-3

NEW ACCURACY

for CONCENTRATION MEASUREMENT

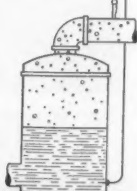
New opportunities for higher accuracy in liquid concentration control are now offered by Foxboro Temperature Difference Measurement. This modern method of measurement takes full advantage of Foxboro Dynalog Electronic Instruments . . . unequalled for their sensitivity, speed and accuracy. By continuous comparison of boiling point of product with that of water at the same pressure, a temperature difference Dynalog Recorder accurately measures boiling point rise.

Important new possibilities are opened up by this precise method of measuring temperature differences. Consider where it might help you. Write for details. The Foxboro Co., 19012 Neponset Ave., Foxboro, Mass., U.S.A.

FOXBORO

Reg. U.S. Pat. Off.

DYNALOG ELECTRONIC INSTRUMENTS



When inquiring check CP 8138 on handy form, pgs. 2-3

DECEMBER, 1951

PROCESS INSTRUMENTATION

size from 1½ x 2" to 2½ x 4½". Shunt leaf material is manganum and has adequate surface area for good heat dissipation.

(Produced by Assembly Products Inc., Dept. CP, Main at Bell Street, Chagrin Falls, Ohio . . . or for more information check CP 8139 on handy form, pages 2 and 3.)

Repeatedly positions piston to within 0.001 inch . . .

controller system gives excellent servo response

Uses: This very adaptable controller system can be used to ultimately regulate pressure, position, tension, flow, force, torque, or other variables.

It is especially recommended for use in roll pressure control, compensating wind-up rolls, tentering controls, and similar jobs.

Features: Piston stroke speed is controlled and the piston itself can be brought to within 0.001 inch of desired position repeatedly.

Description: Servo "loop" in this case is made up of a differential transformer which indicates distance and direction of the piston from set point. Electrical signal drives a controller which opens or closes a control valve in the hydraulic or pneumatic line. Selection of response in controller allows the rate of piston motion to be controlled as well as final position.

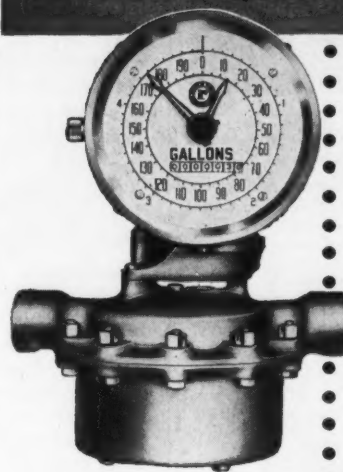
(Automatic Temperature Control Co., Inc., Dept. CP, 5200 Pulaski Ave., Philadelphia 44, Pa., is the maker . . . or for more information check CP 8140 on handy form, pages 2 and 3.)

Valve-controller is single unit

Simple controller units are shown in two-color, 4-page bulletin. Controller for pressure or temperature is built right into the control valve itself. Power source for controller is the sensing element — no electric or pneumatic lines or connections are employed.

Showing the many details and specifications, Bulletin 1320 is issued by Dept. 67, Tagliabue Instruments Div., Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. When inquiring specify CP 8141 on handy form, pages 2 and 3.

Get Basic Accounting Data ON ALL LIQUID STOCKS, TRANSFERS



THE METERS
YOU NEED

YOU CAN MEASURE
most any liquid
that can be piped
— oils, chemicals,
paints, liquors,
solutions — over
50 different li-
quids in all. Com-
plete list is in bul-
letin OG-400.

CLIP
COUPON
MAIL
TODAY

with ROCKWELL INDUSTRIAL METERS *Fast, Accurate* FORMULA AND COST CONTROL

With Rockwell industrial meters in your plant you can get precise quantity control over all liquids used in batching, blending or processing. You can identify losses, stop waste, improve the quality of your formulas. Important to many are the indisputable records that Rockwell meters provide. From them basic accounting facts can be developed for cost identification and inventory controls.

Rockwell meters are made for pipe sizes from ½" through 3". They are strongly constructed from materials suitable to the fluids to be handled — will give years of accurate, dependable service. Their initial low cost will quickly be paid out of savings. Use the handy coupon below or write for bulletin OG-400.

ROCKWELL MANUFACTURING COMPANY A5115-1
Pittsburgh 8, Pa.

Gentlemen: I am interested in measuring _____
(Name of Liquid)

Pipe Size _____" Working Pressure _____psi Temperature _____°F. max.
Max. Flow Rate _____gpm Min. Flow Rate _____gpm

YOUR NAME _____
COMPANY _____
STREET _____ ZONE _____ STATE _____
CITY _____

When inquiring check CP 8142 on handy form, pgs. 2-3

Precise Temperature Control

... yours with
**DOLE
VACUUM
PLATES**

DOLE Vacuum Plates are daily finding new and important applications in the chemical industry where precise temperature control is required to control reaction rates, liquify gases or solidify liquids.

DOLE Vacuum Plates consist of continuous refrigerant tubing enclosed in evacuated steel jackets holding an eutectic solution. Connected to a compressor or to a central system, the eutectic solidifies as the compressor runs and provides cooling effect when the compressor is idle. Temperatures can vary widely from minus 59° F. to plus 45° F. and can be held to any predetermined value.

DOLE Vacuum Plates are made as single units of varying dimensions for use as shelves (shown above); overhead banks; plates for refrigerated truck or trailer delivery; or in groups in Ice-Cels to provide a huge reservoir of cooling effect.

Wherever product cooling is required in industry, DOLE Vacuum Plates offer precisely controlled cooling easily installed and operated.

Write today for complete engineering information.



DOLE REFRIGERATING CO.

5952 N. PULASKI RD., CHICAGO 30, ILL.
103 Park Ave., New York 17
Dole Refrigerating Products, Limited,
44 Elgin St., Brantford, Ont., Canada

When inquiring check CP 8143 on handy form, pgs. 2-3

A Special Valve for

**STRONG, HOT
ALKALINE
SOLUTIONS**

Made of Mercoloy — a special grade of nickel bronze. Highly resistant to alkaline solutions; also many concentrations of sulphuric acid. Free from galling. Automatically lubricated. Ask for prices.

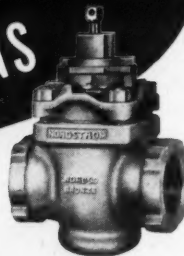


Fig 814—1/2" to 8"
300-lb and 200 lb.

ROCKWELL MANUFACTURING COMPANY
400 N. Lexington Ave., Pittsburgh 8, Pa.

NORDSTROM
MERCOLOY
VALVES

When inquiring check CP 8144 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Indicates gel time accurately
at controlled temperature
as viscosity changes . . .**

abrupt change in viscosity at gel point sounds alarm, flashes light, and stops motor and timer

Uses: Can be used to check the effect of reaction temperature, catalyst or inhibitor concentrations, and quality of product in the manufacture of such thermosetting compositions as monomers, resins, varnishes, and other protective coatings.

Features: Operation of instrument is semi-automatic. When sample has been placed in the instrument, it goes on to make the test without further attention. End point is indicated by alarm system.

Description: Operation of the Gel-time Meter depends on proper adjustment of an accurate torsion spring. This spring, made of pre-selected 0.010" wire, is placed so that exactly 0.96" is exposed between driving and driven spindle jaws. A gauge is furnished with the equipment for making this setting. An actuating switch with one contact on the driving spindle and the other on the driven spindle is set to 3/32" as the test begins. Viscous drag tends to twist the torsion spring until, when the gel point is reached, the actuating switch is closed.

In order to maintain constant temperature during the test a bath with heating and condensing elements is provided. The heating element is an electric resistance heater and can be easily controlled by a variable voltage source. Temperature is held constant by boiling the bath liquid and for this reason a condenser coil is mounted near the top of the bath chamber.

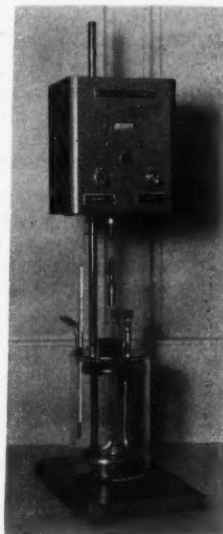
Motor and control unit is ring-stand-mounted above the bath. It contains both visible and audible alarms as well as a time counter. Least count of the timer is 0.1 minute. When the sample has been placed in the test tube in the bath, and instrument set in operation, no further attention is needed until the alarm is sounded. This, of course, happens when the gel point has been reached. The motor and timer immediately stop — leaving only the job of recording and placing the next sample to the operator.

(Gel-time Meter has been developed by General Electric Company, Dept. CP, Schenectady 5, N.Y. . . . or for more information check CP 8145 on handy form, pages 2 and 3.)

**Either continuous process control
or batch weighing performed
by air scale . . .**

in operation the unit counterbalances any tare to allow a direct measurement of the net weight

Uses: Pneumatic transmitter will indicate, record or control weight or force through standard instruments in the manner commonly applied to temperature, flow,



Gives gel time accurate to
tenth of a minute



Before you select a Temperature Regulator, compare low-cost Stacon with the rest. No other regulator has as many features or offers as many advantages as a Farris Stacon.

PROVE IT!

Make this Chekchart Test

	Farris Stacon	Air Operated	Self Operated
• Dirt Proof — Hermetically Sealed?	Yes	.....	.....
• Extreme Accuracy?	± 1°	.....	.....
• Packing or Glands to Leak?	No	.....	.....
• Drop-tight Shut off?	Yes	.....	.....
• Vapor-steam Energized Super Power Pilot?	Yes	.....	.....
• Supervision—Maintenance?	None	.....	.....

Write for Stacon Bulletin 50-1000. It contains complete information on the most sensitive, accurate, economical temperature regulator available . . . anywhere.

Farris Stacon Corp.

506 COMMERCIAL AVE. PALISADES PARK, N. J.

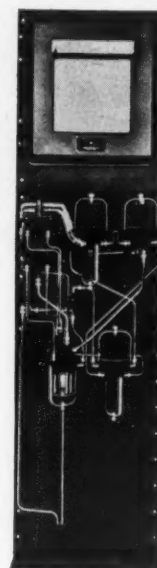
When inquiring check CP 8146 on handy form, pgs. 2-3

CAMBRIDGE GAS ANALYZERS

Labor saving — profit producing!

Cambridge Gas Analyzers continuously analyze and simultaneously record on one chart from one to six constituents of a gas. They may be used for most simple and many complex mixtures of gases. Dependable and labor-saving, these Analyzers make possible increased efficiency and savings in the operation of steam generating plants, cement kilns, blast furnaces; in the production of inert gases; in metallurgy, in petroleum refining and other chemical processes.

Send for literature mentioning application



3-POINT RECORDING
GAS ANALYZERS
(CO₂, H₂, CO)

CAMBRIDGE INSTRUMENT COMPANY INC.

3706 Grand Central Terminal, New York 17, N.Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 8147 on handy form, pgs. 2-3

CHEMICAL PROCESSING

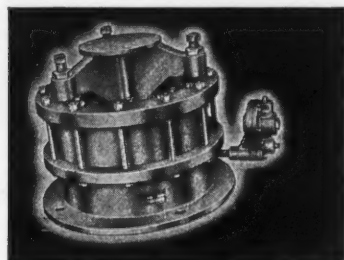
PROCESS INSTRUMENTATION

pressure and level problems. Typical applications include: conveyor control for continuous weight discharge, continuous weight-proportioning feeder for solids and liquids, thrust measurement of a jet engine and torque measurement of internal combustion engines.

Features: Unit is completely enclosed and requires no electricity, even for remote indications, thereby eliminating explosion hazards along with danger of damage from chemicals, corrosive materials or dust. Design is very compact — a unit capable of weighing up to 10,000 lb occupies less than one cubic foot of space.

Description: Basically, the F-C "air scale" Weight Transmitter consists of a weight platform and two separate air chambers (net weight and tare weight) with diaphragms. Operating on the force-balance principle, the net weight chamber diaphragm is supported by the exact air pressure needed to counterbalance the weight

or force applied to the weight platform. This air-loading pressure is automatically adjusted by a nozzle device to maintain balance at all times. Thus, the pressure becomes a measure of the applied force



General design and construction features of weight transmitter

over the full scale range of the transmitter.

A pneumatically loaded tare weight chamber counterbalances any portion of the load that is not to be weighed. The output pressure from the net weight chamber is thus a direct measurement of the net weight. Total motion of the weighing system transmitted through the diaphragm is 0.003" for full scale range, thereby minimizing mechanical troubles and permitting smaller units for simplified mounting.

Simple indication is obtained by connecting the output air to a manometer or pressure gauge. The linear relationship between the measured force and the pneumatic signal simplifies calibrations.

Standard units are available to handle from a matter of ounces up to 40 tons, or higher if required.

(F-C "air scale" Weight Transmitter is manufactured by Fluid Controls Co., Inc., Dept. CP, 5150 Ridge Ave., Philadelphia 28, Pa. . . or for more information check CP 8148 on handy form, pages 2 and 3.)

Circuit characteristics shown for instrument men

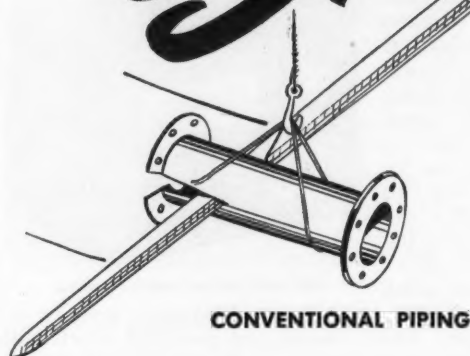
Especially useful to those involved in design and application of electronic potentiometer instruments, this 15-page, illustrated booklet shows circuits, responses, and values of components for manufacturer's units. Publication is not intended for light reading — it is a concise manual covering the characteristics of the measuring circuits themselves.

Bulletin B15-13 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne and Windrim Avenues, Philadelphia 44, Pennsylvania. When inquiring specify CP 8149 on handy form, pages 2 and 3.

DECEMBER, 1951

PIPING COSTS

Slashed



CONVENTIONAL PIPING

If your safety or relief valves discharge into a collecting header, you can effect substantial reduction in discharge piping cost by specifying BalanSeal Safety Relief Valves... economies that amount in some instances to 15 times as much as the cost of the valves themselves.

HERE'S HOW: Because BalanSeal Safety-Relief Valves balance out the effects of discharge pressure surges, you can use much smaller discharge piping... can depend on your valves to operate at the set pressure regardless of how high the back pressure may be.

Besides this big economy feature of a BalanSeal installation, you get what you *must* expect of any really *safe* safety-valve—positive protection at all times and under all conditions of operation.

HERE'S WHY: The FarriSeal bellows seals off the stem, guide, and spring... protects them from corrosive action of the lading fluid... prevents freezing of the moving parts. Proper proportioning of the bellows diameter nullifies the effect of back pressure on the relieving point... the *only* force opposing the lifting of the disc is the spring pressure.

Finally, the long, 2½ to 1 guiding ratio of the stem in the guide assures smooth action without cramping.



You can't afford to overlook the advantages of BalanSeal—for Savings and Safety. Get your copy of MANIFOLD DISCHARGE PIPING APPLICATION—Manual 51-B—a valuable reference work on this subject.

*Patented and Patents Pending

Farris

SAFETY and RELIEF VALVES

FARRIS ENGINEERING CORP.

406 Commercial Avenue

Palladas Park, N. J.

Ⓢ 1089

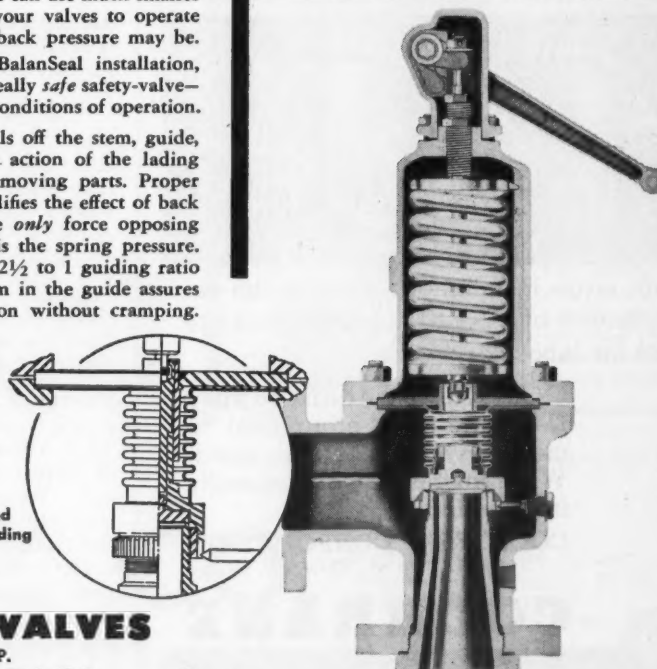
with

BalanSeal®

TYPE

FarriSeal

SAFETY VALVE

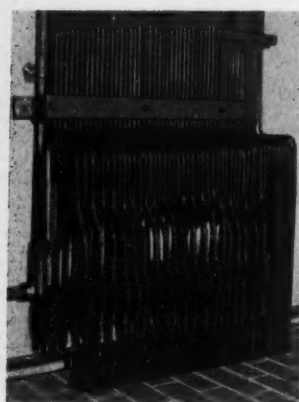


When inquiring check CP 8150 on handy form, pgs. 2-3

ADVERTISEMENT

New process coats instrument tubing with corrosion-resistant plastic . . .

Dekoron tubing outlasts copper and alloy tubing many times.



Uses: Dekoron tubing economically replaces ordinary tubing in chemical process plants where instrument lines are subjected to the corrosive effects of moisture, salt air, acids, alkalis, oil or grease.

Features: Dekoron armor is tough, flexible, corrosion-resistant . . . does not interfere with the workability of its core material . . . requires no special tools for bending or installation.

Description: Plastic is chosen according to properties of corrosion resistance needed in tubing application.

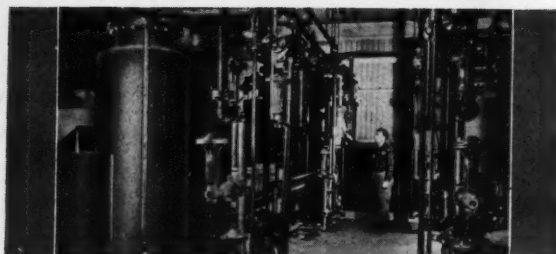
Black Dekoron coating can be applied over any kind of metal tubing, and sizes range from about 1/8 inch OD up. Standard tubing fittings covered with corrosion-resistant plastic tape are used at tubing joints. Manufactured by Samuel Moore's patented extrusion process, Dekoron instrument tubing is available either as a complete tubing using steel as the core material or as an extrusion service using customers' tubing.

Source: Dekoron instrument tubing is manufactured by Samuel Moore & Company, Mantua, Ohio — or for more information check CP 8151 on handy form, between pages 2 and 3.

ADVERTISEMENT

When inquiring check CP 8151 on handy form, pgs. 2-3

COCHRANE DEMINERALIZERS



From large installations serving the requirements of an entire plant to package units for laboratory work.

COCHRANE can supply Demineralizing equipment to meet any commercial need. Write for bulletin and specific information.

COCHRANE CORPORATION
3162 N. 17th St., Phila. 32, Pa.

COCHRANE



When inquiring check CP 8152 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

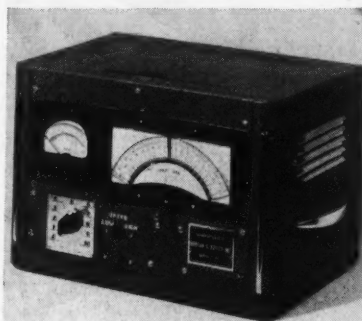
Fractional hp motors get accurate test of torque, speed . . .

both convenience and accuracy are combined in dynamometer

Uses: For checking characteristics of fractional horsepower motors.

Features: Only one connection is made between motor and dynamometer, and all controls are located on the face of the instrument.

Description: Dynamometer is made up of a standard 2" PM hysteresis brake (CHEMICAL PROCESSING, March '51 cff. 90) mounted in low-friction ball bearings to which a counterweight is attached. Torque is measured directly, as is speed. Torque scale is graduated in 2.5 oz units and two speed scales run to 4000 and 10,000 rpm. Maximum power which can be metered is 0.16 hp @ 4000 rpm; 0.40 hp @ 10,000 rpm. Other models are projected which will extend the range to 0.01 hp in smaller units, and up to 3/4 hp in larger ones.



All controls are panel mounted

(Full details are available from the maker — Duncan & Bayley, Inc., Dept. CP, 785 Hertel Ave., Buffalo 7, N. Y. . . . or for more information check CP 8153 on handy form, pages 2 and 3.)

Recording clamp-on ammeter is accurate to 3 percent for any wire size . . .

can be used for spot checks of current or left in one position to record for any length of time

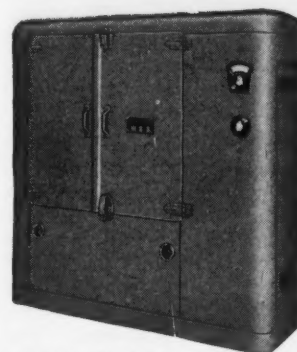
Uses: Unit is designed for checking alternating currents to 500 amp on lines whose voltage does not exceed 5000 v. Especially useful for detecting faulty equipment, improper use of equipment or other conditions which would lead to abnormally high current.

Features: Recorder uses magnetic pickup of the clamp-on type. This allows recorder to be switched from line to line very quickly. Clamp handles any wire size up to 2 inch.

Description: Functioning on the magnetic induction principle, the Weston Clamp-Ammeter Unit Model 633, Type AIR-A2R is used for making rapid measurements of current in conductors whether they are insulated or not. Trigger action clamping jaw is hooked onto the conductor and the current induced in the winding of the clamping jaw is transmitted to recorder. This recorder can be stationed several hundred feet from the point being checked. Rubber insulated, laminated clamping jaws are insulated to stand 5000 v AC.

Used with commercial sine wave generators, with frequencies between 50 and 70 cps, the instrument has an overall accuracy of 3 percent. Position of the conductor within the jaws accounts for some of this variation

accuracy at High Operating Speed with Despatch LABORATORY OVENS



- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

Chemical and analytical, drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13"x13"x13" to 37"x25"x50".

MANUFACTURERS OF OVENS
FOR ALL PURPOSES
ASK FOR BULLETIN
No. 106

DESPATCH
Established 1902

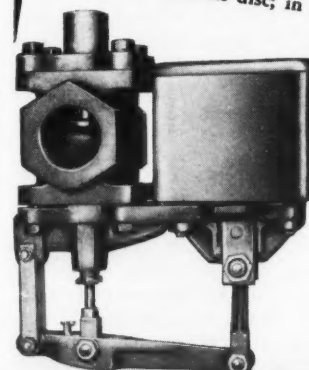
343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 8154 on handy form, pgs. 2-3

JOHNSON Direct Acting Solenoid Valve — for 150 lbs. Differential Pressure . . .

You can get a solenoid valve that operates under differential pressures up to 150 lbs., temperatures to 400°F., without pilot valves. It ends the time lag and wire drawing that come with slow opening — the danger of sticking that comes with auxiliary pistons. It offers unusual possibilities for all types of automatic, or remote, flow control. Johnson Solenoid Valves are available for normally closed or normally open service; with stainless steel valve and seat or Jenkins disc; in sizes from 1/2" to 3".

Write for
Bulletin "V"



WHERE CAN
YOU USE THIS
AUTOMATIC VALVE?

- No pilot valves
- Temperatures to 400°F.
- Differential Pressures to 150 lbs.
- Immediate full flow
- Heavy duty construction

The Johnson Corporation

826 WOOD ST.

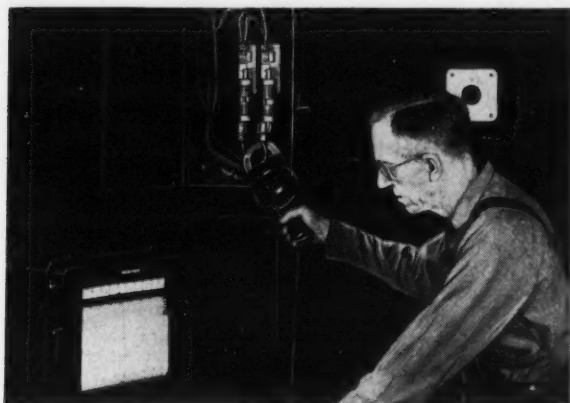
THREE RIVERS, MICHIGAN

When inquiring check CP 8155 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

of reading. Temperature effect on reading is very small, producing a maximum of 1 percent change in reading throughout the temperature range from 32 to 110°F.

Recording unit is flexible. It uses the rectified AC signal from the clamp. For permanent installation a rectifier converter unit and current transformer are recommended.



Clamp-on arrangement allows current metering without disrupting any circuit

Up to 12 points can be recorded by the unit — a typical case being a four point recorder handling a four wire, three phase system.

(Equipment is a product of Tagliabue Instruments Div., Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Avenue, Newark, N. J. . . . or for more information check CP 8156 on handy form, pages 2 and 3.)

Very readable book surveys entire instrument field

Hard-bound, 8-1/4 x 11-1/4", 291-page book explains and compares the underlying principles of nearly all instruments. Early chapters of the book are concerned with general basic information, but later chapters deal with specific methods, design factors, and detailed comparisons of instrument types. Several advertising pages contained in the book are entirely separate from the text, yet placed near the heading under which they fall. In the nature of a directory of available types, the advertising adds to the book and helps to balance any 'theory' aspect without lengthening or padding the technical sections.

Because of the organized arrangement of the book, no index is given. Well-ordered chapters make it possible to locate various subjects. Coverage extends to aviation and nuclear instruments. Space is given to subjects like dimension gauging, determining physical properties, testing finished products, etc. Conventional fields of thermometry, pressure and vacuum measurement, flow-rate measurement and control, and others are covered. Notable omissions in this edition are chapters on weighing, combustion control, and time and sequence measurement.

"The Handbook of Measurement and Control" is available to all new subscribers to *Instruments Magazine* — for a 1-year subscription and the instruments book, remit \$4.00 direct to The Instruments Publishing Company, Inc., Dept. CP, 921 Ridge Ave., Pittsburgh 12, Pa. When inquiring specify CP 8157 on handy form, pages 2 and 3.

DECEMBER, 1951

why CRANE 600-pound small steel gates are sure to meet your needs

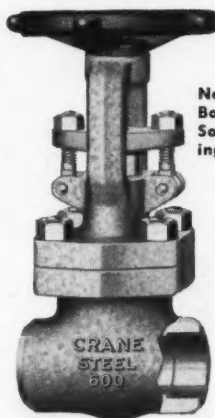
You can't top these Crane Small Steel Gates for dependable performance on high pressure, high temperature lines . . . for ease of operation . . . for simplified maintenance. That's because they include design features normally found only in larger or more expensive valves.

Then too, these Crane valves are available in a choice of types to meet your particular requirements. For example, with union or bolted bonnets; with screwed, flanged, or socket-welding ends; and in trim materials recommended for all common fluids.

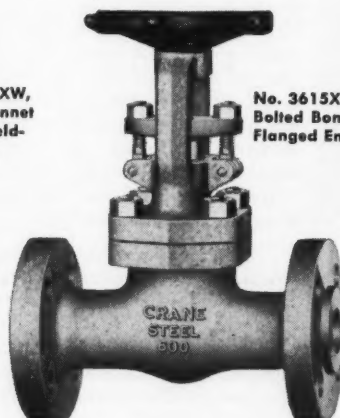
GET NEW DESCRIPTIVE CIRCULAR AD-1881



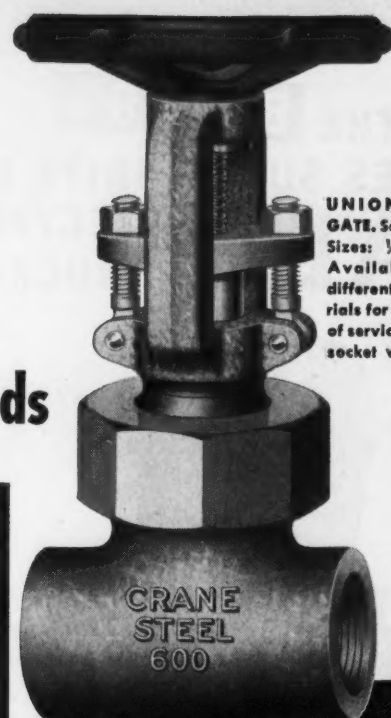
For complete information—including prices—about these longer lasting, easier operating Crane Small Steel Gate Valves. Ask your Crane Representative for your copy, or write direct. No obligation.



No. 3611XW,
Bolted Bonnet
Socket-Weld-
ing Ends

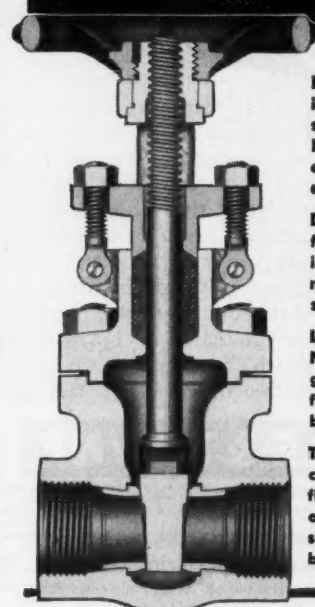


No. 3615XW,
Bolted Bonnet
Flanged Ends



UNION BONNET
GATE. Screwed ends.
Sizes: 1/4 to 2-inch.
Available in three
different trim mate-
rials for a wide range
of services. Also with
socket welding ends

Easy to Operate... Easy to Service



EASY ACCESS to stuffing box assured by swinging gland eye-bolts. Improved yoke design provides liberal working space.

DEEP STUFFING BOX filled with high quality asbestos packing rings maintains tight stem seal.

LEAKPROOF BONNET JOINT. Soft iron gasket in male and female joint cannot blow out.

T-HEAD DISC-STEM connection provides flexibility for smooth operation; prevents stem distortion or binding of parts.

Cross-section No. 3607XW, Bolted Bonnet Gate, Screwed

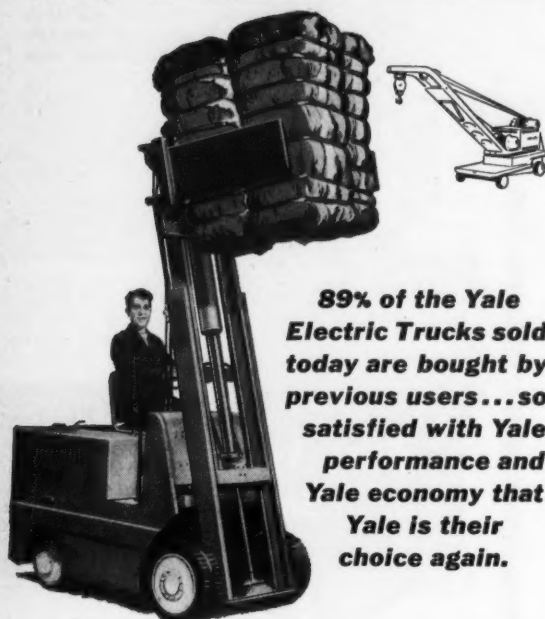
CRANE CO.

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

General Offices:
836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving
All Industrial Areas

When inquiring check CP 8158 on handy form, pgs. 2-3

THE **BIG 89%** PROVES SUPERIORITY OF **YALE** ELECTRIC TRUCKS



89% of the Yale Electric Trucks sold today are bought by previous users...so satisfied with Yale performance and Yale economy that Yale is their choice again.



THESE users had ample opportunity to learn how Yale Electric Trucks save man-hours, step up production, speed all materials handling jobs. They have found that Yale Trucks pay for themselves faster...then go on giving many years of service...taking the toughest jobs right in stride.

Ask your Yale Representative to show you these actual performance records which persuade Yale users to buy Yale Electric Trucks again and again.

YALE & TOWNE

The Yale & Towne Manufacturing Co., Philadelphia 15, Pa.
YALE is a registered trade mark of The Yale & Towne Manufacturing Co.

—SEND THIS COUPON TODAY—

The Yale & Towne Manufacturing Co., Dept. 1212

Roosevelt Boulevard & Haldeman Ave., Philadelphia 15, Pa.

I am interested in cutting my materials handling costs.

- ☐ Please have your local representative call on me.
☐ Please send me free detailed literature.

Company _____

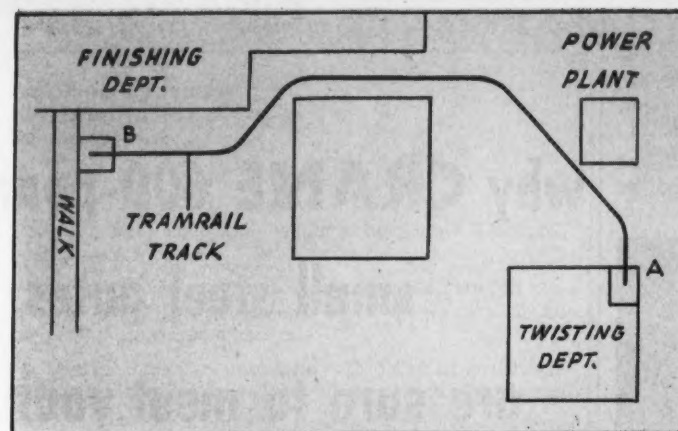
Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Manufacturing Company,
St. Catharines, Ontario

YALE GAS AND ELECTRIC INDUSTRIAL TRUCKS • YALE WORKSAVERS
YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS

When inquiring check CP 8159 on handy form, pgs. 2-3



Material Handling

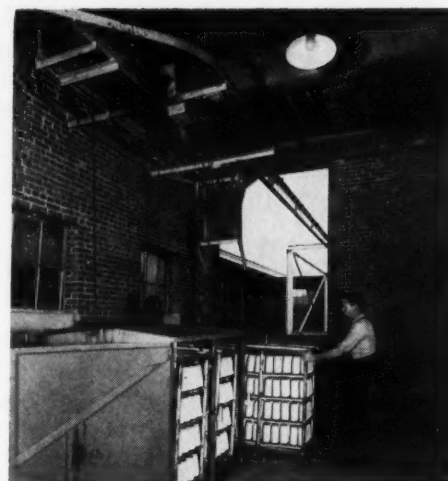
Van-car moves yarn via tramrail between twisting and finishing departments in 5 minutes

Replacing floor trucks, it shuttles over 666' archbeam track between twisting and finishing departments

"Overhead Moving Van" Saves Yarn Mill \$7,000 a Year In Transferring Loads Between Buildings

PROBLEM: At China Grove Cotton Mills Co., China Grove, N. C., crews of men were required to move floor trucks up ramps, move them on and off elevators, and transport them over long walks between buildings. This was a laborious task to which workers did not like to be assigned. As trucks could not be moved outside during heavy rains, transfer of loads between buildings was interrupted and operations delayed. Manual handling was not only slow but involved accident hazards.

Solution: An overhead tram-rail system was installed which carries a special van-type car a distance of 666'. Car has two compartments, each with its own door, and will accommodate four platform trucks. Operation is almost entirely automatic. After trucks have been placed in van, it cannot be hoisted until doors are closed. Also, carrier will not travel until van is firmly in position. Just the push of a button raises the van and sends it on its way, without attendant. It stops and lowers automatically at each end of the system. Travel time is about 4 or 5 minutes each way. Track is 28' above



Design of van-car permits quick, easy loading and unloading, prevents hoisting until door is closed

ground level. Points on each end of van carrier pry open doors of loading-unloading stations at each end of line.

Results: Manual movement of loads of yarn between twisting and finishing departments entirely eliminated. Time required to transfer yarns between departments is reduced to approximately 5 minutes. Valuable manpower is relieved for other duties, and the few workers needed for this handling operation are not exposed to accident hazards. There is no delay because of bad weather, and as archbeam rail system does not have to be enclosed, it takes up relatively little space. Actual savings effected by the system are \$7000 a year.

(Tramrail and van-car system are a development of The Cleveland Crane & Engineering Co., Dept. CP, 1012 East 289th St., Wickliffe, Ohio... or for more information check CP 8160 on handy form, pages 2 and 3.)



Tramrail track runs distance of 666' at height of 28' above ground. Requires no enclosure

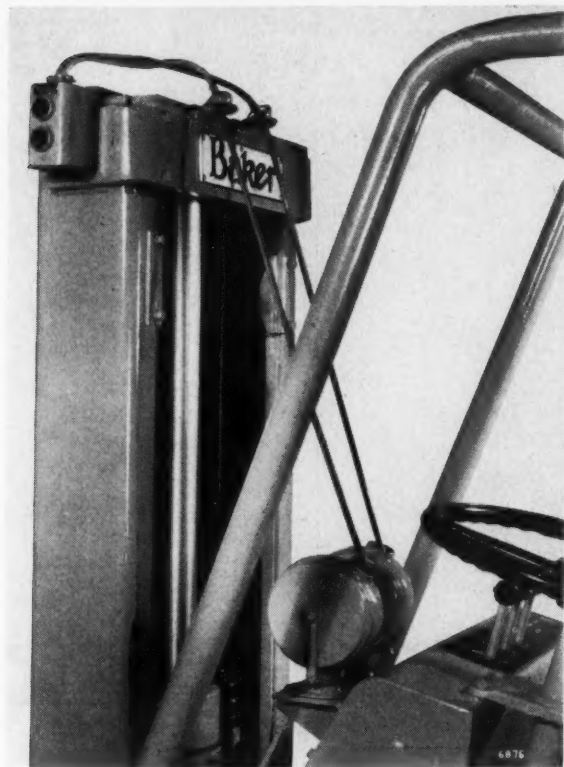
**Remote pushbutton gives
man on the lift
control . . .**

safety and speed of truck increased when it is used in lifting men for stacking or repair work

Uses: Truck of lift type may be fitted with this attachment for high hand-stacking or overhead repair work. Start and stop button control is available for the men who are on the pallet or platform.

Features: Increases speed and safety in raising or lowering personnel.

Description: Standard start and stop control buttons are connected by cable to the dash board of the truck. Cable is held under tension in two reels to prevent kinking.



Control cable is held under tension in reels

Pushbutton box is quickly demounted from its position on frame and can be carried up on the forks, or to the side of truck for better visibility. Enough cable is supplied to reach the maximum lift height of forks.

(Developed by Baker Industrial Truck Div., The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio . . . or for more information check CP 8161 on handy form, pages 2 and 3.)

**Suggests electrical means
for fine positioning**

Two-color, four-page illustrated folder shows several units designed for very precise positioning. Operation is based on variable output of a differential transformer which is determined, in turn, by core position. Linearity is 0.1 of 1% over a 0.300" range.

Folder gives principles, applications, types, and specifications. Engineering drawings are used to show dimensions of three units. Engineering Data Folder 63 is issued on letter head request to Automatic Temperature Control Co., Inc., Dept. CP, 5212 Pulaski Ave., Philadelphia 44, Pa.

DECEMBER, 1951

CHASE

built to take it! sharkcraft

THE ALL-CRINKLED MULTIWALL BAG

Chase Sharkcraft sharply reduces costly breakage . . . it is, indeed, **BUILT TO TAKE IT!** Available in 2 to 5 plies of extra strong crinkled kraft. Furthermore, it provides a sure grip . . . it's easier to handle and stack, and you'll like the sharp, colorful printing of this better container.

Get full details on Chase Sharkcraft from your Chase Salesman—and be sure of the most efficient container for your product. He is supported by more than 100 years of experience in providing better bags for American industry and agriculture.

**CUTS COSTLY
BREAKAGE
IN THE
PACKAGING OF...**

- Farm Products
- Powdered Milk
- Mineral Concentrates
- Seeds • Chemicals
- Pharmaceuticals
- Fertilizers
- Rock Products
- Meat Scraps and Tankage
- Starch Products

Bags for All Industry and Agriculture

- cotton bags of all kinds
- Topmill burlap bags
- Sazolin open mesh bags
- paper and Multiwall bags
- combination bags, liners and specialties



Check with your Chase salesman
or mail this coupon TODAY!

CHASE BAG COMPANY
309 West Jackson Boulevard
Chicago 6, Illinois

Gentlemen: Please send me more information about SHARKRAFT bags

for the packaging of.....
☐ Have Salesman Call

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CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

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PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • BHDVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

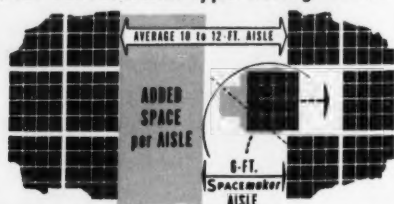
When inquiring check CP 8162 on handy form, pgs. 2-3



NOW TO YOUR EXISTING STORAGE FACILITIES

with the **RAYMOND**
SpaceMaker
ELECTRIC
TIERING TRUCK

How wide are the storage aisles in your plant or warehouse . . . 10 feet . . . 12 feet? If so, you're wasting up to one-half this width making room for conventional-type tiering trucks!



The new RAYMOND SpaceMaker does away with waste aisle space — increases your storage capacity by as much as 1/2. It's a rider-type tiering truck that actually right-angle tiers loads 130" high from aisles only 6-ft. wide. Just look at these SpaceMaker advantages:

● **STACKS FROM 6-FT. AISLES** Exclusive RAYMOND design eliminates counterweight, shortens overall length. Result: SpaceMaker tiers loads from 6-ft. aisles — permits one extra row of storage for each aisle now in use.

● **MANEUVERS LIKE MAGIC** Offset drive wheel produces 200° turning arc — enables SpaceMaker to maneuver in aisles narrower than its own length with load.

● **WEIGHS SO MUCH LESS** Compact construction plus no counterweight result in far lighter truck. Thus, SpaceMaker operates in low-capacity elevators, on lighter-capacity floors — has lower battery capacity requirements, costs less to run.

● **WRITE TODAY FOR BULLETIN 703** — it tells the complete SpaceMaker story. And ask for a SpaceMaker demonstration — you have to see it to believe it!

Pioneers Since 1840

RAYMOND

SpaceMaker Model E25T Straddle-type, telescopic tiering truck. 2000-lb. capacity.

The RAYMOND CORPORATION
Formerly LYON-Raymond Corporation
5750 SpaceMaker St., Greene, N.Y.

Gentlemen: Please send me Bulletin 703 on your new SpaceMaker Electric Tiering Truck.

Name _____ Title _____
Company _____
Street _____
City _____ State _____

When inquiring check CP 8163 on handy form, pgs. 2-3

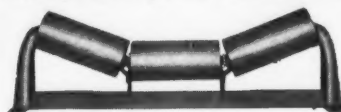
MATERIAL HANDLING

Idler's sealed lubrication, prevents contamination, cuts hp requirements . . .

friction factor constant over wide temperature range

Uses: Cover a wide range of idler requirements: keeping belts centered, regulating movement and similarly controlling operation to increase belt efficiency and prevent damage.

Features: Combination of contact sealed, high speed, heavy duty ball bearings and special mounting de-



Solid roll shaft idler

sign effectively exclude foreign material and retain bearing lubricant. Horsepower requirements are reduced. Operating belt tensions are reduced and there is no contamination of product with grease. Uniform friction factor and jib-welded, in-line construction facilitates belt training and reduces number of self-aligning idlers needed.

Special built-in lubricant operates with no appreciable change in viscosity from -30° to 200°F. It melts at 376°F and is inhibited against oxidation, emulsification and saponification.

Description: Idler frame is all-steel, jig-welded. Roll shafts are solid, extend completely through the idler roll and are mounted to eliminate all cantilever loading on the roll ends.

Idler roll diameters may be reduced because lower bearing friction and high speed heavy duty ball bearings allow the use of 4" rolls where 5" rolls were formerly required.

Rolls are interchangeable. Inverted angle base sheds material.

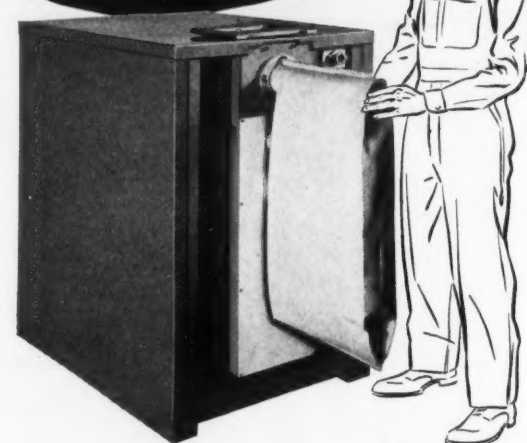
(Heavy prelubricated belt idlers are built by Transall Inc., Dept. CP, 109 North 11th St., Birmingham 4, Ala. . . or for more information check CP 8164 on handy form, pages 2 and 3.)

Issues atomic catalog

A 108-page catalog details consulting service on radioactivity problems. Items covered include instruments and isotopes. Catalog is issued by Tracerlab, Inc., 130 High Street, Boston 10, Mass. When inquiring specify CP 8165 on handy form, pages 2 and 3.



**CUT
BAG PACKING
COSTS**



AUGER-MATIC
Bag Packer

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste . . . a time and labor saver. Packer can easily be moved from one filling point to another.

Send for descriptive literature.

E. D. CODDINGTON MFG. CO.
5036 NORTH 37TH STREET • MILWAUKEE 9, WISCONSIN

When inquiring check CP 8166 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

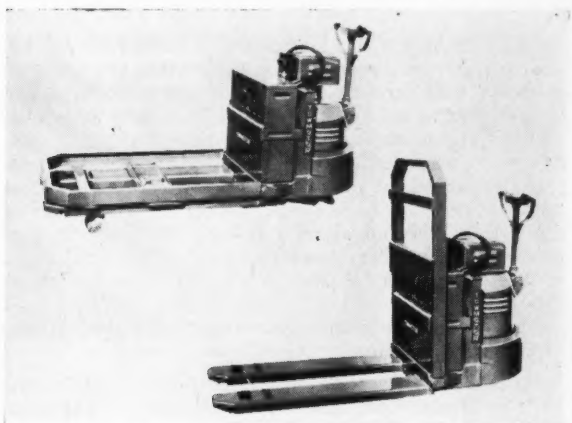
Adapter rests on pallet forks, allows truck to handle tote boxes, skids, platforms . . .

width of accessory is 29"; height of forks with adapter lowered is 11"; raised 7"

Uses: Swiftly converts electric pallet truck into a platform truck, and makes possible efficient mechanized handling of platforms, skids and tote boxes.

Features: When not in use, folds up over battery and latches securely, as shown in illustration. When in place, or ready for use, it adds extra height to the pallet forks.

Description: Construction is of sturdy steel framework. Height of forks with adapter is 7" in lowered position. 11" raised. This particular adapter is avail-



Platform adapter folds back over battery

able in lengths to match standard pallet fork truck lengths of 42, 48, 54, 60, 66 and 72".

Designed for use on builder's Model W pallet trucks powered by lead acid batteries under 27" long, adapter is available in lengths to match standard pallet truck forks up to 72" long. Special platform adapters for use with batteries longer than 27" can be designed.

(Platform adapter is a development of Towmotor Corp., Dept. CP, 1226 East 152nd St., Cleveland 10, Ohio . . . or for more information check CP 8167 on handy form, pages 2 and 3.)

Increase, decrease load center or load capacity of trucks to meet needs of specific job . . .

redesigned assemblies, load arm pins permits use of optional additional counterweight on 2000 lb truck

Uses: These recently developed upright assemblies and load arm pins permit use of optional additional counter-weights on maker's 2000 lb capacity model. This permits increasing or decreasing load-centers or load capacity as the need requires.

Features: Operators can select counterweight needed for any particular handling job. In addition, by removing counterweight not needed for ordinary light capacity jobs, fuel and maintenance economies are achieved and unnecessary wear on floors is avoided.

Skeleton counterweight which can be installed on special order reduces truck weight by 600 lb. This extreme

(Continued on next page)

CONTINENTAL STEEL CONTAINERS

are built to take it!

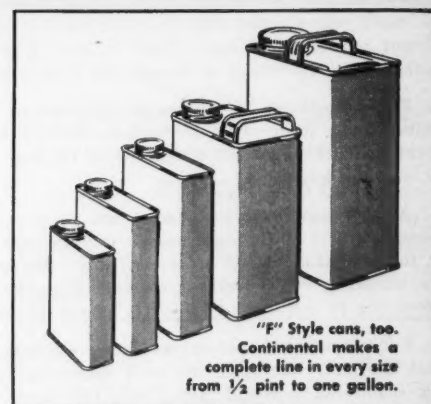


Continental steel containers are not only good looking, but are built to take it. They protect your products en route, take rough handling in stride and arrive at their destination bright, tight, and beaming sales appeal.

Here's another feature: Continental's master lithographers have the skill and experience it takes to make your trademark and sales message the center of attraction—and by faithful reproduction of design, make steel containers part of your package "family."

Give your products the protection and sales appeal of a Continental steel container. Call on your Continental representative today. He'll be glad to give you all the facts you need.

You can't beat Continental as a dependable source of supply!



"E" Style cans, too. Continental makes a complete line in every size from 1/2 pint to one gallon.

CONTINENTAL © CAN COMPANY

CONTINENTAL CAN BUILDING

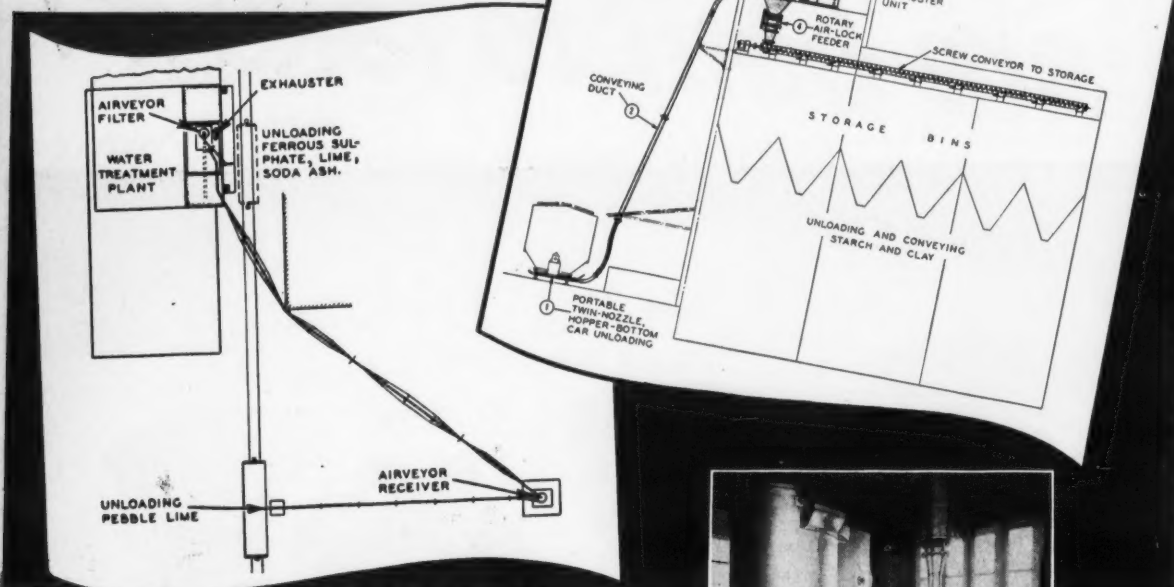
100 East 42nd Street

New York 17, N. Y.

Eastern Division: 100 East 42nd Street, New York 17 • Central Division: 135 So. La Salle Street, Chicago 3 • Pacific Division: Russ Building, San Francisco 4

When inquiring check CP 8168 on handy form, pgs. 2-3

The AIRVEYOR[®]



**Pre-planning means
a more efficient installation**

... always *START FROM SCRATCH*

When you handle dry pulverized and granular materials, the sensible, economical, and most satisfactory plan of selecting a pneumatic conveying system is to "Start from scratch" ... make your selection while the plant is still in the planning stage. Pneumatic conveyors permit economy and convenience in location of buildings and production equipment without the restrictions or straight-line limitations of mechanical conveyors.

Fuller Engineers have years of experience in their field. They'll survey your plans, make a close study of local conditions and the materials to be handled. Then—they'll make their recommendation from one of the four Fuller time-and service-proved systems, at no obligation to you.

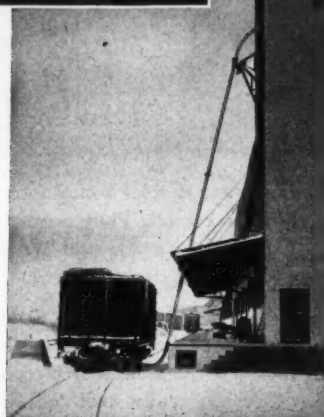
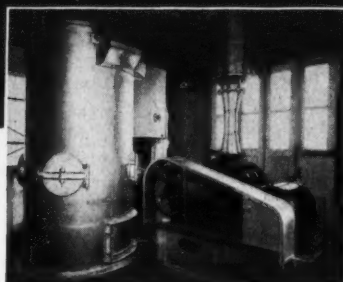
And—because each installation has peculiar requirements of its own—their recommendation will be the right one for the job—the system that will handle your materials in the most efficient and economical way. Shown here is the Airveyor, used successfully for unloading dry pulverized, crushed, granular materials from shipping units, and for conveying to and from storage. It is economical, safe, thoroughly dependable.

Fuller has specialized in pneumatic conveying systems and knows from experience that the most successful, the most economical, and the most trouble-free installations are engineered and built along with the plant, with individual requirements in mind. Call on Fuller when planning a new plant or modernizing an old one; you'll be sure of a conveying system that meets your requirements in every detail.

Fuller

**DRY MATERIAL CONVEYING SYSTEMS AND COOLERS —
COMPRESSORS AND VACUUM PUMPS —
FEEDERS, AND ASSOCIATED EQUIPMENT**

When inquiring check CP 8169 on handy form, pgs. 2-3



**FULLER COMPANY, Catasauqua, Pa.
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.**

MATERIAL HANDLING

(Continued from preceding page)

lightweight is an advantage where elevators and floors have limited load capacity.

Description: Standard 2000 lb capacity model at 15" load centers is now available at 24" load centers, incorporating necessary design and mechanical changes. An optional 3-piece additional counterweight is used to bring truck up to 2000 lb capacity at 24" load centers. Optional counterweights bolt to the rear of the machine with 8 capscrews, adding 2½" to overall length.

Also made possible by redesign, is ability to bring lightweight model up to standard capacity of 2000 lb at 15" load centers and 1500 lb at 24" load centers by addition of same optional 3-piece additional counterweight previously described. Three basic variations make six combinations in the same model truck:

- 1) 2000 lb at 15" load centers: Standard model has standard integral counterweight built in.
- 2) 2000 lb at 24½" load centers: Capacity of standard model can be increased to 2000 lb at 24" load centers by additional counterweights easily installed in field.
- 3) 1300 lb at 15" load centers: Lightweight model has skeleton integral counterweight installed at factory.
- 4) 1000 lb at 24" load centers: Lightweight model is capable also of this rating with no alterations.
- 5) 2000 at 15" load centers: By adding counterweights in the field lightweight model can be made into a standard model.
- 6) 1500 lb capacity at 24" load centers: Lightweight model with additional counterweights installed is also capable of this rating.

(Model 20 trucks with additional counterweights are built by Hyster Company, Dept. CP, 2903 N. E. Clackamas St., Portland 8, Ore. . . . or for more information When inquiring check CP 8170 on handy form, pgs. 2-3

**Trolley acceleration, stoppage,
reversal smooth when fluid
coupling transmits power . . .**

replaces accelerating speed control; swinging of load minimized; capacity range ⅛ to 12 tons

Uses: For use on a wide range of track sizes in transporting loads in range of ⅛ to 12 tons.

Features: Fluid coupling replaces accelerating speed control, reducing maintenance costs. It transmits power from the motor to the drive unit through a cushion of oil. Freedom from shock to the load and motor provided by the fluid coupling permits actual reversal of the motor from full forward speed to full speed reverse, providing smooth yet rapid deceleration and stoppage or complete reversal. No motor brake is needed.

Description: Since motor starts unloaded and comes up to 85% of full speed before starting the load, there is no prolonged inrush of current. Power requirements are less than one-half normal, with accompanying reduction in motor heating and maintenance. Should the trolley reach the end of the track and power is still fed to the motor, coupling absorbs the full torque, reducing the possibility of the motor stalling out, overheating and eventually burning out.

(Application of fluid drive to hoisting equipment is a development of The Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . . or for more information check CP 8171 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

MATERIAL HANDLING

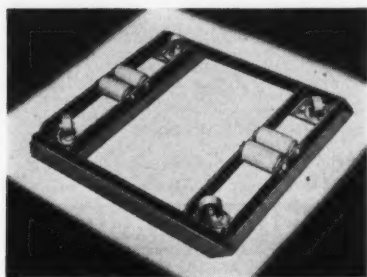
Pallet roller rotates 360°, handles loads up to 4000 lb . . .

parallelism, alignment of frame consistently retained

Uses: For rapid rolling of pallet loads in any direction.

Features: Rotation range of 360° eases handling of loads in limited space. Rolls are heavy gauge, large diameter and free rolling. Frame contains hexagon holes to prevent axles from turning.

Description: Frame is constructed of high tensile strength steel, fully welded. Equalizer design retains parallelism and alignment of frame



Underside of pallet loader

under all conditions. Bearings are heavy duty, fully lubricated. All units in line have maximum capacity of 4000 lb.

(Ace swivel pallet loaders are built by Frank L. Robinson Co., Dept. CP, Latham Square Bldg., Oakland, Calif. . . . or for more information check CP 8172 on handy form, pages 2 and 3.)

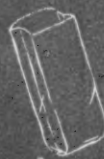
Aids understanding of servomechanism

Non-technical in approach, this two-color, 24-page, illustrated booklet explains the underlying principles of servomechanism. While systems based on the servo idea are not new, they have experienced a considerable maturing during the recent war and are now vastly improved and extended.

Booklet shows what, how and why — giving enough detail to point to specific uses in processing. Booklet G-56 is issued by Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8173 on handy form, pages 2 and 3.

For more information on product at right, specify CP 8174 . . . see information request blank between pages 2-3.

The least expensive and most satisfactory package for many chemical products is a paper bag



If you manufacture dry chemicals sold in units up to 25 lbs., you probably can package effectively in paper bags—at substantial savings.

Union's versatile CHEM-PAK bags can provide the kinds of protection your products need. They are sift-proof. They are being made to lock out moisture, odor, grease, vapor, corrosion. They resist rough handling. They also can retard

flavor loss and product deterioration.

You pay less for CHEM-PAK than for other comparable packages. You save on filling, sealing and handling costs. You reduce freight charges. You cut losses from package damage or breakage.

Measure your present container against CHEM-PAK. Send for new *Package Evaluator* or ask to see a Union representative.

Union's modernized plant at Hudson Falls, N. Y. Billion-bag specialty packaging headquarters.



CHEM-PAK BAGS FOR FERTILIZERS—INSECTICIDES, FUNGICIDES, DUSTING POWDERS—PLANT FOODS—WALL SIZE—PASTE FLOUR—PATCHING PLASTER—PREPARED CEMENT—PLASTER OF PARIS—PHARMACEUTICAL CHEMICALS—DYES AND PIGMENTS—SANITARY CHEMICALS—POWDER SHAMPOOS—CHLORINE COMPOUNDS AND ALKALIDES—CAULKING, SEALING, WHITING AND FILLING COMPOUNDS—AND OTHER DRY CHEMICALS WITH COMPARABLE PACKAGING REQUIREMENTS

CHEM-PAK
SIFT-PROOF PAPER BAGS FOR CHEMICAL PRODUCTS

**UNION BAG
& PAPER CORPORATION**

New York: Woolworth Building
Chicago: Daily News Building



NEW! Mail this coupon for practical CHEMICAL PACKAGE EVALUATOR. No charge or obligation.

Union Bag & Paper Corporation
Woolworth Building, New York 7

Please send me the new Chemical Package Evaluator.

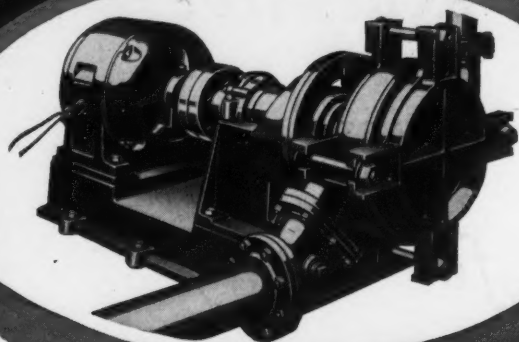
Name _____ Title _____

Company _____

Address _____

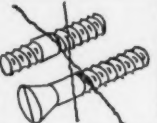



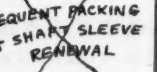
City _____ Zone _____ State _____

Helps avoid your biggest pump problems
Morris Type "R" Slurry Pump



Gives longer uninterrupted service

Ordinarily harsh abrasives wear out your pump. The corrosive action of acids eats away its utility. Time-consuming maintenance and repairs cut down your production. Now see why the Morris Type "R" helps avoid these problems.

1		Simple design—The Morris Type "R" has no internal studs and bolts. Nor does it have troublesome internal joints and flts. The Suction Disc Liner is merely clamped into position between disc and shell. Fewer wearing parts means less maintenance and longer uninterrupted service.
2		Easily dismantled—The impeller and shaft sleeve of the Morris Type "R" Slurry Pump can be renewed without disturbing the suction and discharge piping or the bearings. This means considerably less lay-up time.
3		More abrasive resistant—With the clamping effect of the bolts on the discs, the shell is not subject to high stress. Consequently, the shell can be made of a large variety of materials, including those of high abrasive resistance. Yet these materials need not necessarily be of high tensile strength.
4		The hydraulic passages of the suction disc are extremely large and velocities are low. As a result, wear is minimized and renewal infrequent.
5		Stuffing box troubles are practically eliminated because the suction gland is under low suction pressure only.

IN CHEMICAL ENGINEERING—
Morris Type "R" Slurry Pump handles
mixtures containing acid concentrates
... tailings slag and residue from fil-
ters and classifiers ... all types of
caustic or acid mixtures containing
abrasives or solids.

MORRIS
Type "R"
SLURRY
PUMP

More easily main-
tained ... more
easily dismantled
... more hours of
continuous service.
Proved by 84 years'
Morris experience
in pump building.

MORRIS

CENTRIFUGAL PUMPS
MORRIS MACHINE WORKS
BALDWINVILLE, N. Y.
Offices in Principal Cities

When inquiring check CP 8175 on handy form, pgs. 2-3

MATERIAL HANDLING

Writing table, handy rack
for stationery increase
stock truck's utility ...

eases checker's job of keeping
tab on orders, inventory

Uses: Designed to handle a
variety of items or parts.

Features: Shelves have 1" flange
all around which prevents materials
from falling off. Truck is furnished
with writing table 20 x 14" and
stationery rack 20 x 8".

Description: All steel welded con-
struction providing three shelves.
Length 44"; width 20". Overall



Steel-welded stock truck

height to top shelf 42 1/2"; height
between lower and center shelves
20"; between center and top shelves
12".

Equipped with four 6" rubber tired,
roller-bearing casters. Those at push
handle end are swivel and at other
end are rigid.

(Stock checker's truck is built by
Palmer-Shile Co., Dept. CP, 16016
Fullerton, Detroit 27, Mich. ... or
for more information check CP 8176
on handy form, pages 2 and 3.)

Improved facilities at steel plant

Included in this 12-page booklet are
photographs of this steel company's
new plant for supplying steel from
stock, plus its personnel, stocks, cutting
and shipping facilities, and a brief
history of its operations. "Our New
Home" is issued by Joseph T. Ryerson
& Son, Inc., Dept. CP, Box 300,
Cincinnati 14, Ohio. When inquir-
ing specify CP 8177 on handy form,
pages 2 and 3.

AT THE MORTON SALT COMPANY RITTMAN, OHIO



BAKER
FORK
TRUCKS

tripled storage capacity
and eliminated need
for new warehouse
construction!

WRITE FOR CASE STUDY REPORT No. 291

BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Raulang Company
1208 West 80th Street • Cleveland 2, Ohio

Baker INDUSTRIAL TRUCKS

When inquiring check CP 8178 on handy form, pgs. 2-3

ANY LENGTH YOU WANT TO
SUIT YOUR REQUIREMENT

The "HAMMOND"
Screw-Veyor

... DOES AWAY WITH Old
Fashioned "U" Shaped Boxes

STREAMLINED
TUBULAR
CONSTRUCTION

ALWAYS IN
POSITIVE
ALIGNMENT

NO DIS-
TORTION

DUST-TIGHT
MOISTURE-PROOF
INSURES SAFETY
AND ELIMINATES
FIRE HAZARD

... The most outstanding im-
provement in conveyors in a
decade. Each screw length is
suspended in patented bearings,
removing all structural load from
the casing. Runs as smooth as a
machine. ... Rigid—Flexible—Acces-
sible. WRITE FOR FORM M-600-2.

STANDARD FEED END ASSEMBLY

STANDARD INTERMEDIATE ASSEMBLY

STANDARD DISCHARGE END ASSEMBLY

This discharge end assembly combined with any number of
intermediate assemblies and a feed end assembly forms a
complete conveyor system to suit any condition.

Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
ENGINEERS PRODUCTS U.S. PAT. OFFICE

When inquiring check CP 8179 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Smooth surface, rounded corners, edges of medium-duty trailer platform won't tear bags . . .

bagged material may be piled or bags assembled on pallets to a load capacity of 3000 lb

Uses: Suitable for handling bagged material or for carrying one or two pallet loads of bags.

Features: Smooth steel construction with rounded corners. This prevents bags or other materials from



Trailer carries loose or palletized bags

being damaged. There are loops on each side for diagonal-type coupler rods. These rods permit backing with a tractor without "jack-knifing".

Description: Capacity 3000 lb; length 69"; width 36"; height of end racks 23"; height deck from floor 14". Each end of trailer is provided with tubular racks which are removable. Trailer comes furnished with cushion rubber wheels.

(Medium duty trailer is built by Market Forge Co., Dept. CP, Everett, Mass. . . or for more information check CP 8180 on handy form, pages 2 and 3.)

All necessary information on rubber packings

Featured in this 8-page bulletin are illustrations and descriptions of pure gum floating stock, neoprene, red rubber, pure gum stock, black oil-resistant, cloth-inserted, and diaphragm sheet packings. Service recommendations are provided for each type of sheet, and the various standard thicknesses, standard packages, and weights per square yard are included. "Rubber Sheet Packings" is issued by Raybestos-Manhattan, Inc., Packing Division, Dept. CP, Manheim, Pa. When inquiring specify CP 8181 on handy form, pages 2 and 3.

7 lubricants fill majority of all plant requirements

Seven specialized lubricants that meet majority of plant requirements for ball and roller bearings, plain and ring bearings, open gears, enclosed gears, speed reducers, and oils for cleaning and loosening or penetrating are presented in 20-page, illustrated bulletin. Gives characteristics, benefits, uses, densities, specifications, and container size.

Bul BK-19 is issued by the Keystone Lubricating Company, Dept. CP, 21st & Clearfield & Lippincott Sts., Philadelphia 32, Pa. When inquiring specify CP 8182 on handy form, pages 2 and 3.

DECEMBER, 1951


"I believe in being honest and telling you Exactly What I Think About This Bag Closer"




For full details, write today for booklet 280 P

"I bought a Model ET Bagmaker® — the one that applies the 'Cushion Stitch' over a dry tape. It makes a neat, strong, sift-free closure. The machine is of welded steel construction throughout — well built — I don't think it will ever wear out. It takes care of up to 15 bags per minute, and only one man is needed to operate it.


"The thing I like best about the Model ET is that it hasn't given me a bit of trouble — no breakdowns or delays. It purrs right along minding its own business. I'm sold on it."



International Paper Company



220 East 42nd St., New York 17



BAGPAK MULTIWALL BAGS BAG PACKAGING MACHINES

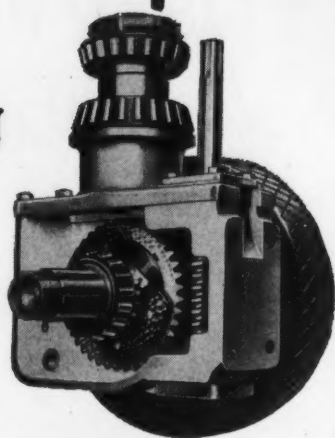
BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco

IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto.

When inquiring check CP 8183 on handy form, pgs. 2-3

Here's why users get "400% longer life"

from
Stuebing
Hydrolectrics



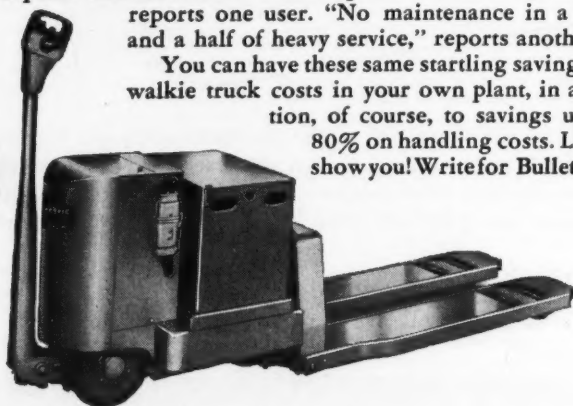
This sealed gear drive cuts 80% off maintenance and downtime!

Sealed in lubricant, this alloy-steel gear drive in the Stuebing Hydroelectric takes the place of old-style drive chains ... actually gives Stuebing walkie trucks a drive comparable to modern automobiles.

Only Stuebing engineered Lift Trucks give you this sealed gear drive plus four-wheel stability, easy steering and twin front driving wheels.

From users come startling reports of increased service life up to "400% and more!" plus astounding savings on repairs and downtime. "No repairs ... no downtime," reports one user. "No maintenance in a year and a half of heavy service," reports another.

You can have these same startling savings on walkie truck costs in your own plant, in addition, of course, to savings up to 80% on handling costs. Let us show you! Write for Bulletin H.



Choose from 1071 Standard Models

Lift Trucks Incorporated

2425 Spring Grove Avenue Cincinnati 14, Ohio

When inquiring check CP 8184 on handy form, pgs. 2-3

MATERIAL HANDLING

Catalog sections ease conveyor selection

Photos, sketches, charts and specifications in 28-page catalog make it easy to make selection of conveyors, trucks and casters to meet exacting material handling requirements. The first of three sections in this catalog gives details on steel and aluminum wheel and roller gravity conveyors. Each wheel model varies in the number of conveyor wheels per foot depending on type of load.

Illustrations show such construction features as high carbon steel axles, grease packed ball bearings and "knitted frame" channel design. Diagrammatic photo in roller section shows seven design features. Power conveyor section includes permanent and portable units while trucks are offered in single and double pushbar platform models.

Catalog CG-52 is issued by The Rapids-Standard Company, Inc., Dept. CP, Grand Rapids, Mich. When inquiring specify CP 8185 on handy form, pages 2 and 3.

Thorough presentation of small industrial trucks

Sixteen-page, 3-color bulletin gives thorough coverage to series of 5 basic industrial trucks. Presented are platform, pallet, fork, and tractor types, with operating and construction features clearly shown. Capacities — to 6000 lb — are given.

Trucks can be ridden or driven, and are battery-powered. Main feature is size; these trucks are particularly suitable for areas where floor areas preclude the use of standard units but where the advantages of mechanized handling are desired.

Bulletin P809 is issued by Yale & Towne Manufacturing Company, Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. ... or for more information check CP 8186 on handy form, pages 2 & 3.

Bins and shelves of steel

Every possible information to aid in the selection and ordering of steel shelving and related equipment is given in this eight-page bulletin. Parts bins, shelving with dividers, steel benches and tool room equipment are topics of description. Equipogram 172 is issued by Equipco, Division of Aurora Equipment Co., Dept. CP, Aurora, Ill. When inquiring specify CP 8187 on handy form, pages 2 and 3.

MODERN TIME AND COST SAVERS

BUILT BY... **Standard**
GRAVITY & POWER
CONVEYORS



Faster Piling in Warehouses with the HANDIPILER

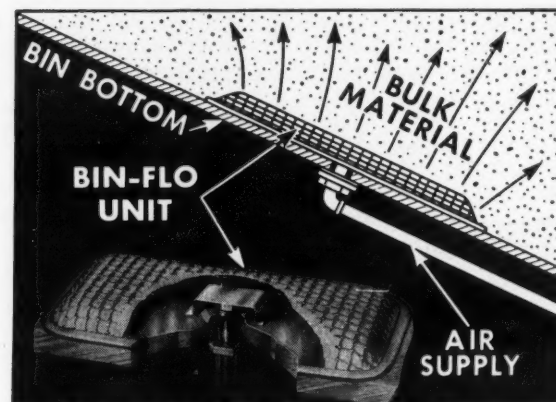
For loading, unloading, stacking and elevating sacks, boxes, cases, and cartons. Adjustable boom reaches to rear of storage piles or far into cars, trucks, trailers. Reversible apron — conveys commodities up or down. Piles to 17 ft. — handles packages up to 100 lbs. Saves lifting, carrying — cuts handling time in half. Write for HANDIPILER Bulletin — address Dept. 00000.

Send for Standard Bulletin No. 63-B describing gravity & power conveyor units. Address Dept. CP-121.

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul, Minn.
Sales and Service in Principal Cities.



When inquiring check CP 8188 on handy form, pgs. 2-3



BIN-FLO USES SMALL VOLUME OF AIR AT LOW PRESSURE KEEPS BULK MATERIALS MOVING

BIN-FLO units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

BIN-DICATOR bin level indicator—"The Eyes of the Bin"—automatically reports levels of materials in storage; automatically controls filling machines; prevents waste.

THE BIN-DICATOR CO.

13946-D Kercheval • Detroit 15, Mich.

NEW
20-PAGE
BOOK
FREE

When inquiring check CP 8189 on handy form, pgs. 2-3

CHEMICAL PROCESSING

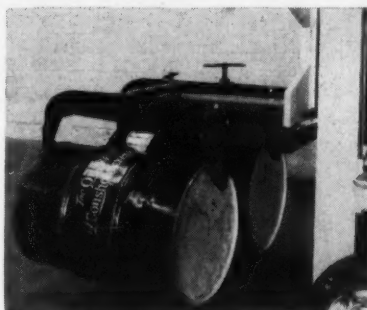
MATERIAL HANDLING

Fit handling device over forks of truck; pick up and move 1 or 2 drums at a time . . .

springs position rear clamps; gravity then locks them in place when truck is backed up slowly

Uses: Picks up one or two standard drums to load, unload, stack or move to point of use.

Features: Device attaches to any industrial fork truck without removing forks or making any hydraulic or mechanical connections. Completely automatic, this self-contained unit fits over forks and is fixed to them with two screw type clamps.



Gravity actuates clamping action

Operation is safe and efficient and loads are held securely despite sudden stops or travel over rough surfaces.

Description: Rear clamps are spring loaded and snap under lip of drum. Springs do not carry load. Gravity action locks the clamping hooks in place when drums are lifted. Depositing drums is just as easy as picking



Drum handler requires no mechanical connection

them up. Drums are lowered, truck is moved forward (stretching springs on rear clamps) and after front clamps are freed, channels on truck are tilted back. Truck is then backed away to free rear clamps. Attachments weighs 270 lbs. Drums containing a wide range of common materials may be handled.

(Drum handler is built by Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . or for more information check CP 8190 on handy form, pages 2 and 3.)

Use of correct extinguisher for class of fire involved

Information contained in this 32-page illustrated booklet details modern fire-fighting devices and the different extinguishing agents used in them. It gives instructions on the correct fire extinguisher to be used for the class of fire involved. "Correct Fire Protection" is issued by American-LaFrance-Foamite Corp., Dept. CP, Elmira, N.Y. When inquiring specify CP 8191 on handy form, pages 2 and 3.

DECEMBER, 1951

LOCKED IN . . .



The Safety Package for Hard-to-Control Products . . .

Fulton W.P.P.L. (Waterproof Paper Lined) Bags are made with a tough paper or plastic lining laminated to cotton or burlap. The most finely powdered product cannot sift through this lining, which is also an efficient vapor and moisture barrier.

Fulton W.P.P.L. Bags are designed especially for sensitive products that are affected by evaporation, changing atmospheric conditions, or that need protection against moisture or odors.

Over rigid containers they have the advantage of *flexibility* which contributes to easier handling and better utilization of storage space. There are also important savings in initial cost and freight. Address your nearest Fulton branch for further information on this safety package for your product.



Our modern plant in New Orleans is turning out famous Fulton MULTIWALLS in larger and larger quantities. Complete satisfaction and highest praise from industry's largest users, have made Fulton Multiwalls more popular than ever before. Fulton makes the MULTIWALL Bag for your product — all types and sizes.

Fulton BAG & COTTON MILLS

Atlanta • St. Louis • Dallas • Kansas City, Kans. • Denver • Minneapolis • New Orleans • Los Angeles • New York, 347 Madison Ave.

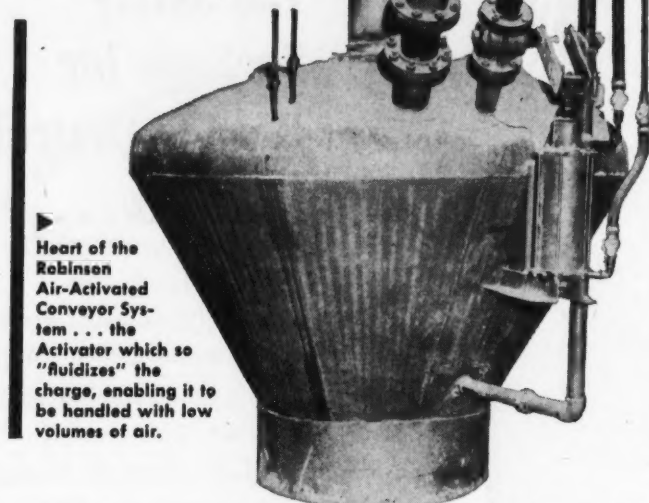
When inquiring check CP 8192 on handy form, pgs. 2-3

Robinson

Air Activated

Conveyor

The
Low-volume
Air Conveyor



► Heart of the Robinson Air-Activated Conveyor System... the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.

Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON

Air Activated

A Division of
Morse Boulger Destructor Co.

CONVEYOR SYSTEMS

211-V EAST 42nd ST. • NEW YORK 17, N. Y.
Representatives in Principal Cities

When inquiring check CP 8193 on handy form, pgs. 2-3

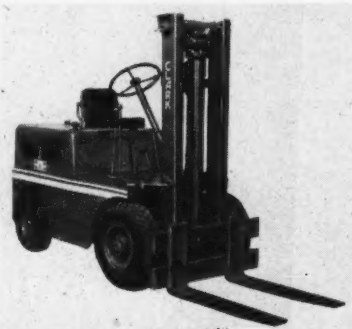
MATERIAL HANDLING

Equip fork-lift truck with diesel engine to cut fuel costs...

unit otherwise matches standard gas truck's specifications

Uses: Primarily for service where fuel economies are a prime consideration.

Features: Elimination of ignition system reduces sparking dangers in areas of high inflammability. This is a distinct advantage in many installations although it cannot, of



40 hp diesel fork-lift truck

course, meet requirements to which fully spark-proof vehicles are equal.

Description: Engine has a bore of 3 5/8", stroke of 4", while displacement is 166 cubic inches. Brake hp is 44 at 1950 rpm.

Turning radius is 85 1/2"; overall width 41 3/4". Operating differences from gas powered counterpart are only such minor ones as necessitated by adoption of diesel engine.

(Diesel-powered Yardlift 40 fork-lift truck is built by Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. . . or for more information check CP 8194 on handy form, pages 2 and 3.)

Increased horsepower aids trucks to climb

Increased horsepower for top performance on steep inclines is outstanding feature of industrial trucks described in an eight-page catalog. Specifications and performance data for hydraulically operated skid-lift and pallet-lift models, utility platform and tractor types are listed. All units are powered by Wisconsin Model AKN air-cooled engine. All have pneumatically-tired drive wheels and are designed for 360° steering.

Issued by Truck-Man Div., The Knickerbocker Co., Dept. CP, 568 Liberty St., Jackson, Mich. When inquiring specify CP 8195 on handy form, pages 2 and 3.

Bag Closing Machines for Every Need...



...from UNION SPECIAL'S Complete Line!...

FOR lower production costs... stronger, neater closures... ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements: 25 different styles of machines! 10 styles of sewing heads! For any kind and size of bag—paper, cotton, burlap, or jute. **ASK FOR RECOMMENDATIONS.** *Illustrated Bulletin 200 will be sent on request.*

Ask for Recommendations

UNION SPECIAL MACHINE CO.
442 N. Franklin St., Chicago 10, Ill.

Gentlemen: Without obligating me, please furnish information on bag closing equipment to handle the following production:

Kind of bags used? _____

Filled weight of bag? _____

Material being packed? _____

Maximum number of bags per minute? _____

Check-weighing required after filling? _____

Conveyor required on Bag Closing Machine? _____

Power: ☐ D.C., ☐ A.C., Volts _____ Phase _____ Cycles _____

Name _____

Company _____

Address _____

When inquiring check CP 8196 on handy form, pgs. 2-3

CHEMICAL PROCESSING

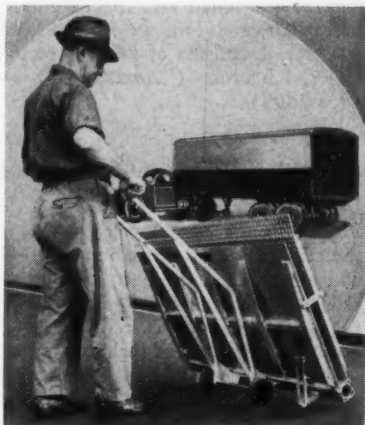
MATERIAL HANDLING

Mobile folding ramp adjusts easily to level of truck bed, sustains loads to 5 tons . . .

moved to point of use by dolly; adjusts quickly to semi-permanent installation

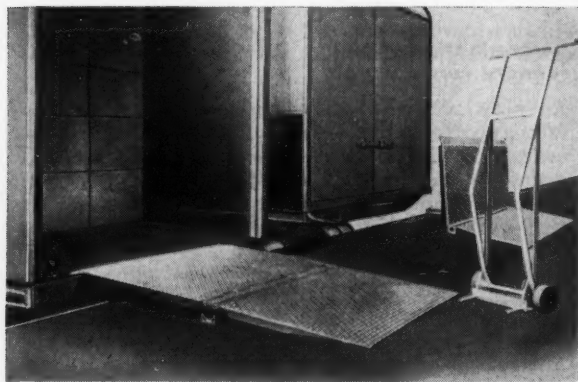
Uses: As a one-man operated mobile ramp for all loads up to a maximum of 5 tons. Facilitates safe transfer of materials to and from dock in speeding of shipments. The ramp is used with trucks and box and refrigerator cars.

Features: Eases most common loading dock problems, including positioning of ramp, and also disposing of ramping surface when ramp is not in actual service. In closed position, ramp stands in a space of only 1 x 4'. Wheeled easily between locations, positions safely in seconds. Folds and automatically locks for added convenience in handling and is double hinged for combined strength, stability and flexibility.



Moving folded ramp with dolly

Description: Ramp is easily wheeled to the job. When ramp is located, the dolly is set aside. (It stands by itself.) An adjustable locking arm hooks over dock face while lateral member underneath lip of front leaf acts as a check against end of truck bed. A semi-perma-



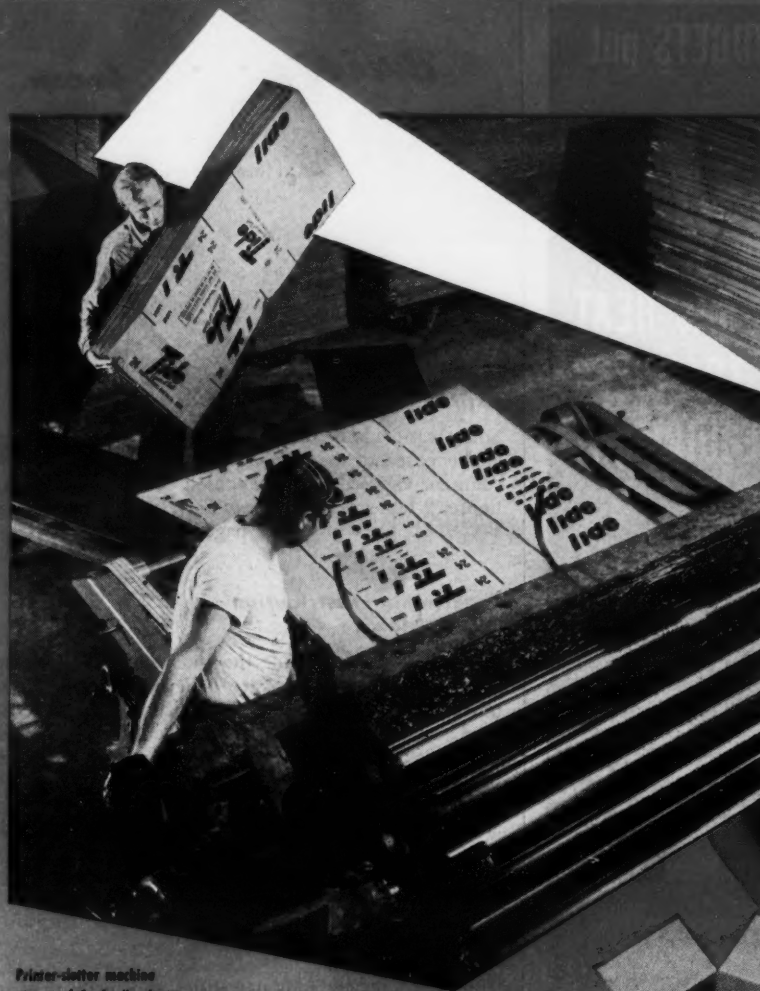
Mobile ramp with folding leaves adjusts to truck level

nent installation is accomplished in a matter of seconds by pinning legs of ramp to the dock. Each leaf locks automatically when raised. When one truck pulls out and another pulls in only one leaf need be raised.

Ramp is 4' wide with ramping length of 5' and is designed to take variations of truck body above dock level with a 10% grade at 6" rise. Lip apron is 4".

(Par adjustable ramp with dolly is available from Superior Railway Products Corp., Dept. CP, 512 Franklin Ave., Pittsburgh 21, Pa. . . . or for more information check CP 8197 on handy form, pages 2 and 3.)

DECEMBER, 1951



Printer-detter machine at one of Gaylord's plants

it's the unseen quality that produces true economy in Gaylord Boxes

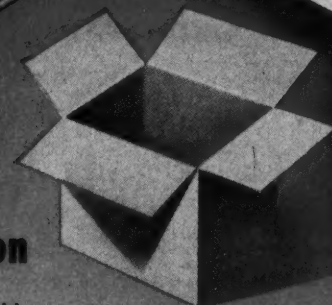
End of the Production Line... Start of Extra Product Protection

Off they come! And after a final check for precision cutting and accurate printing they're on the way.

Here is all the sturdiness and durability that modern science can provide in a shipping container.

Gaylord Boxes are designed and built to provide superior product protection... and they do just that — all the way!

Call your nearest Gaylord Sales Office for competent help in solving your packaging problems.



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CORRUGATED AND SOLID
FIBRE BOXES
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THESE AIRETOOL MIDGETS put NEW LIFE

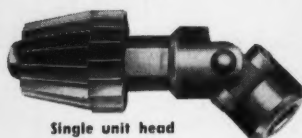
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Single unit head
with universal joint.



Brush type head.



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with cone cutter.



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with universal joint.



Expanding blade type head
with powerful Airetool motor.

**SAFELY REMOVE DEPOSITS FROM
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Keeping condenser, heat exchanger and other small tubes free of scale and other deposits boosts production and adds to the life and usefulness of valuable equipment. These Airetool midget cleaners have been especially designed to safely and speedily remove all forms of deposits regardless of degree of hardness or shape of tube.

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REPRESENTATIVES IN ALL PRINCIPAL CITIES

There's an AIRETOOL Tube Cleaner and Tube Expander for Every Type of Tubular Construction.

When inquiring check CP 8198 on handy form, pgs. 2-3

Page 88

Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,
... as selected by Technical Editor, Harry McCormack

Properties of stainless steel exposed to liquid nitrogen

Study was made of three steels, plate and weld, under stress and exposed to the temperature of liquid nitrogen. Tests compare exposed and unexposed samples. 1 1/4 pages, 1 figure, 2 tables. ("American Society for Testing Materials Bulletin," October 1951, page 35)

Determining distribution of particle size

The papers briefed made the study on fluid cracking catalysts. The observations are believed to be applicable to other materials in comparable size ranges. Techniques used included: sedimentation (four types), screening, microscopic examination, roller analysis and coordination of roller analysis with microscopic examination. Equipment and techniques are described. Results shown in tables and photomicrographs. 20 pages, 11 figures, 9 tables, 9 photomicrographs. ("Proceedings — 27th A. P. I. — November 1947, page 9)

Unit process review

This year's review adds new titles and many new authors. In some divisions specific processes are rather fully described — a departure from prior reviews. As usual particularly valuable on account of the bibliographies accompanying each process reviewed. 160 pages, 17 specific processes. ("Industrial and Engineering Chemistry," September 1951, page 1893)

Procedure for scaling-up a catalytic reactor

Demonstrates the treatment of laboratory data for the preparation of working charts for the designer of the pilot plant and indicates how experience obtained in operating the pilot plant is applied in making the final design. Example used is production of toluene by dehydrogenation of methyl-cyclo hexane. 7 pages, 9 figures, 2 pages discussion. ("Chemical Engineering Progress," October 1951, page 534)

Oxygen in organic compounds directly determined

Describe method and tabulate results obtained in the analyses of pure compounds. "The method is self-contained, has high sensitivity and is not subject to erroneously high results on samples of low oxygen content." 3 1/2 pages, 3 tables, 2 figures. ("Analytical Chemistry," October, 1951, page 1404). A different method for the same purpose is described, with ample clarity so that the equipment

may be assembled and the determinations made. Effects of various conditions were studied. Method is checked by analyses of samples of known composition. 6 1/2 pages, 7 tables, 4 figures. ("Analytical Chemistry," October 1951, page 1408)

Acetaldehyde by dehydrogenation of ethyl alcohol

Reports on the experimental production of acetaldehyde by the catalytic dehydrogenation of ethyl alcohol. Apparatus and operating technique are described. Preparation of catalysts is discussed and effect of various catalysts in effecting desired reaction is stated. Flow sheet for a proposed commercial process is included. 8 pages, 4 figures and 6 tables. ("Industrial and Engineering Chemistry," August 1951, page 1804)

Industrial uses of asphaltic emulsions

Article discusses in general terms the manufacture, behavior and application of asphaltic emulsions. Cites some of the advantages and chief uses of emulsions. 4 pages and 2 photos. ("Petroleum Refiner," September 1951, page 103)

Determination of oil in refinery waste waters

An analytical method is described which has several advantages over methods customarily in use. Equipment necessary is described and illustrated. Method checked against waters of known oil content, and also compared with a conventional method. 5 pages, 6 figures, 4 tables. ("Analytical Chemistry," October 1951, page 1374)

Electrographic printing

Covers a method for evaluating organic surface coatings. Author explains technique required in developing prints. Tells how the method may be used to record changes during a time cycle. Sixteen photos show black and white record of tests. Original prints, in color are more informative. 3 pages and 16 figures. ("Paint and Varnish Production," September 1951, page 19)

Inert fillers in vinyl plastics

The influence of rubber technology on the compounding and processing of vinyl plastics is described. States some basic concepts for vinyl compounding. Lists the desirable properties of a filter for vinyl plastics. Tabulates plasticizer requirements for various inert fillers to assure a con-

CHEMICAL PROCESSING

stant Durometer hardness. Calculates and tabulates "efficiency factors" of various plasticizers. (Most of them identified by trade names only.) A compounding table and a formula are given for formulating to a constant hardness and pound volume cost. 4½ pages, 4 tables. ("Rubber Age," October 1951, page 63)

Supporting large diameter, thin walled pipe

Article presents results from a study the author made of buckling of 72" diam x 5/16" wall steel pipe. Four examples show how support spacing should be calculated. Sources of formulae used are stated. Example gives calculation of necessary wall thickness to prevent buckling. 5 pages, 1 table, 1 chart and 5 figures. ("Heating, Piping and Air Conditioning" September 1951, page 90)

Synthesis of tartaric acid

The experimental results of a study on the synthesis of tartaric acid from maleic acid are presented. An experimental process was discovered which has commercial possibilities. 6 pages, 6 figures, and 6 tables. ("Industrial and Engineering Chemistry" August 1951, page 1780)

Isolating, identifying, estimating gaseous pollutants of air

A new method is described by which the air of Los Angeles County has been analyzed. Limitations of method stated and discussed. Analyses form basis for deductions as to the physiological effects noted as well as the plant damage observed. Complete analysis of concentrates has not been made to date. 9 pages, 4 figures, and 4 tables. ("Analytical Chemistry," October 1951, page 1431)

Mechanical seals for centrifugal pumps

This article comments on the numerous and varied applications of centrifugal pumps with these seals and how pumps should be designed. It defines a balanced seal and gives methods of determining the serviceability of the seal. 4 pages and 3 figures. ("Heating, Piping and Air Conditioning" October 1951, page 102)

Magnesia insulation with improved characteristics

Author describes the process used in preparing a magnesium carbonate with self-setting properties. Schematic drawing shows steps in preparation of materials. Fabrication of pipe insulation from these materials is described. Superior properties of insulation commented on. 3 pages, 2 drawings, 1 photo and 1 table. ("Chemical Engineering" September 1951, page 140)

Analyses of corrosion problems in petroleum refineries

Paper includes 15 case records of corrosion problems. Carbon steel used initially failed for one reason or another. In each case, materials used, kind of service, and extent of corrosion are stated and commented on. Suggestions are made as to materials better able to resist corrosion in each specific instance. 8 pages, 10 tables, 1 figure. ("Petroleum Refiner," October 1951, page 124)

Stop PUMP LEAKAGE

Go from this to this
with EQUISEAL
Stuffing Box

ALLIS-CHALMERS
PROCESS
PUMPS

YOU CAN STOP LEAKAGE entirely on suction heads up to fifteen feet with the Allis-Chalmers Process Pump equipped with *Equiseal* stuffing box. This new stuffing box is so effective that the packing may actually be removed while the pump is in operation and no leakage will occur even though there is direct passage from the liquid being pumped to atmosphere. Where suction head is more than fifteen feet, pressure on the packing is reduced by this amount and leakage is greatly reduced.

HOW IT WORKS

An auxiliary impeller develops a low pressure area in front of the packing. The liquid being pumped is thrown away from the stuffing box and back into the main stream. As a result, pressure on the packing is zero up to fifteen

feet of suction head and the liquid being pumped does not even enter the stuffing box.

So if you must stop leakage because of sanitation, corrosion, abrasion or for any other reason, call your nearby Allis-Chalmers Authorized Dealer or District Office for application engineering help on your job. Or write Allis-Chalmers, Milwaukee 1, Wisconsin and ask for Bulletin 08B6615.

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MOTORS — ½ to 25,000 hp and up. All types.

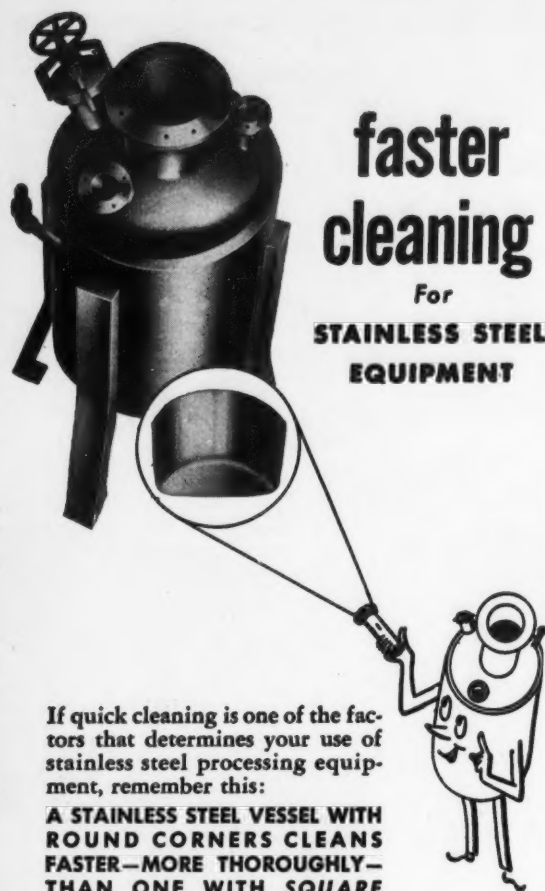
CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



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When inquiring check CP 8199 on handy form, pgs. 2-3



faster cleaning

For
**STAINLESS STEEL
EQUIPMENT**

If quick cleaning is one of the factors that determines your use of stainless steel processing equipment, remember this:

A STAINLESS STEEL VESSEL WITH ROUND CORNERS CLEANS FASTER—MORE THOROUGHLY—THAN ONE WITH SQUARE CORNERS. Whether you clean with brush or cloth—you can "get at" all the surfaces of a round-cornered vessel easily. There are no corners in which residue can hide.

Having worked exclusively with stainless steel and alloys for many years, we have developed to a high degree the techniques needed to fabricate processing equipment with round corners.

Using tools and dies of our own design, we build your vessels so that cleaning time in your plant is cut to a minimum. Result: your stainless steel equipment costs less to operate and lasts longer. Consult with us.

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A request on your letterhead will bring our guide, "What to Look For When You Specify Stainless Steel for Your Processing Equipment."

CORROSION RESISTANT PROCESSING EQUIPMENT

TANKS • KETTLES • STILLS • HEAT EXCHANGERS • AGITATORS • MIXERS • TOWERS • PIPING

When inquiring check CP 8200 on handy form, pgs. 2-3

Page 90

New Literature

Instrument catalog virtually a course in "electrolytics"

By outlining the possibilities of instrumentation through electrolytic — pH, redox and conductivity — measurements, this 40-page catalog reviews and organizes much useful information. It is well illustrated and printed in two colors.

First five pages are spent in discussing the fundamental theory of pH, conductivity and oxidation-reduction potential. Text, then, outlines measuring and control systems briefly and goes on to show how design principles have been applied in eleven systems found in all sorts of industry. Remainder of the catalog classifies and explains electrodes, recorders and controllers, control elements, charts, and other auxiliary items. Engineering drawings and specifications of basic types are included.

Catalog 15-16 is issued by Brown Instrument Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8201 on handy form, pages 2 and 3.

Ideas and suggestions for coal and ash handling

This two-color, 42-page bulletin considers the functional applications of the manufacturer's coal and ash handling equipment rather than specifications. Eight pages are devoted to general view photographs of installations at public utility, industrial and public building power plants. Some 12 layout drawings are given of typical coal handling installations applicable to small, medium-size and very large capacity heating systems.

There are sections in the bulletin which describe and picture unloading equipment for coal arriving by rail, truck and ship; auxiliary unloading devices; and, coal storage and reclaiming equipment. Other items finding treatment here are crushing, transporting and distributing and ash handling equipment, and water screens. Book 2410 is issued by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 8202 on handy form, pages 2 and 3.

Concise survey of hydrogenation of fats and oils

Containing 254 pages, this book presents a general consideration of the fat-hardening industry with the purpose of enabling the reader to become acquainted with the subject in a short time. Also, many of the investigations carried out in the field of hydrogenation are reviewed to serve as a guide to further experimentation.

An account is given of the principal sources of raw materials and the methods used to obtain and refine them, along with some useful world statistics. Particular attention is given to analytical methods as applied to classification of natural oils, and the examination of the products of hydrogenation.

In treating specifically the topic of hydrogenation, and dehydrogenation, the text first examines the theoretical aspects of the thermodynamics involved. Some investigative work is presented in a short discussion of the effect of catalysts on hydrogenation. In a consideration of the effect of reaction conditions on the nature of the product,

experiments from the older literature are compared and interpreted with respect to more recent research. Isomerization and polymerization are main topics of description in a section dealing with the side reactions of hydrogenation.

A thoroughgoing review is given to certain of the commercial hydrogenation processes and equipment, along with a number of illustrations and reaction data. Other topics surveyed include high pressure hydrogenation, reactions with atomic hydrogen, and hydrogenation with the help of hydrogen donors. To obtain "Hydrogenation of Fatty Oils", remit \$6.50 direct to Elsevier Book Co., Inc., Dept. CP, New York 1, N. Y. When inquiring specify CP 8203 on handy form, pages 2 and 3.

Detail varnished and resinous insulating materials

Eight bulletins cover manufacturer's electrical insulations, including varnished materials and resinous products. Each bulletin — varying from 1 to 4 pages in length — gives technical and application data on a particular product. Included among the items discussed are varnished products — cotton cloth and tape, silk, asbestos cloth, glass cloth and tape, and paper. Resin coated glass cloth and tape, and resinous sheeting and tape are topics of two bulletins.

Extruded plastic tubings for leads and wire connections (the subject of another bulletin) are made in black, yellow, green, white, blue, brown and clear colors. Bulletins 750, 750A, 750B, 750C, 750D, 750E, 750F and 310 are issued by Insulation Manufacturers Corp., Dept. CP, 565 W. Washington Blvd., Chicago 6, Ill. When inquiring specify CP 8204 on handy form, pages 2 and 3.

Gives properties and reactions typifying pyrrolidine

This eight-page bulletin briefly details the important physical properties of pyrrolidine and then devotes a large section to the reactions which this secondary amine undergoes. Structural formulas are used in equations exemplifying dehydrogenation, oxidation, addition, condensation, acylation, and alkylation.

Potential applications for pyrrolidine and especially substituted pyrrolidines are pointed out in the preparation of pharmaceuticals and insecticides, particularly agricultural poisons. Reactions are presented which show a number of pyrrolidine derivatives possessing promise as rubber accelerators. New Products Bulletin 28 is issued by Electrochemical Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. When inquiring specify CP 8205 on handy form, pages 2 and 3.

Procedure in the ordering of valve equipment

Numbers 1 and 2 in a series of articles on how to order equipment, this 8-page reprint from *Petroleum Processing* describes the procedure to be followed with respect to valves. Information necessary to enable the user to fit the proper valve for the application at hand is discussed in detail. This includes: data required when ordering manually operated valves, power-operated

CHEMICAL PROCESSING

valves, instrument operated valves, pressure and temperature regulators, traps and level controllers, relief valves and check valves.

"How to Get What You Need When You Order a Valve" is issued by Public Relations Division, The Cooper Alloy Foundry Co., Dept. CP, Hillside, N. J. When inquiring specify CP 8206 on handy form, pages 2 and 3.

Senses voltages over and under limits

One-page bulletin describes a relay circuit operating as a single unit for controlling applied voltage within desired limits. Relay has a low and high limit voltage so that contact in controlled circuit is only made when input volts fall in desired range. Operating range may be only a volt or two, or as many volts as desired. Control level can be low voltage for control work, or may be line voltage.

Bulletin shows circuit, explains action, and points out possible uses such as step-by-step voltage regulation, low line voltage control, control of remote circuits by line voltage modulation, and others. "Sensivolt" is issued by Sola Electric Co., Dept. CP, 4633 W. Sixteenth St., Chicago 50, Ill. When inquiring specify CP 8207 on handy form, pages 2 and 3.

Over 160 attachments for lathes

More than 160 different attachments and accessories for lathes, drill presses and shapers are illustrated and specified in this 35-page catalog. Although the items described are designed primarily for the manufacturer's equipment, many of them can be easily adapted to other makes. Catalog 5102 is issued by South Bend Lathe Works, Dept. CP, 425 E. Madison St., South Bend 22, Ind. When inquiring specify CP 8208 on handy form, pages 2 and 3.

Cites 1500 uses for industrial tapes

"Polyken Standard Tape Classification Manual" is an 80-page booklet designed to be a basic guide to industrial tape usage. It contains 21 major group classifications (based on US census breakdown) and 175 detailed industry classifications — with approximately 1500 distinct and specific uses for industrial tape. Breakdown covers usage in chemical field.

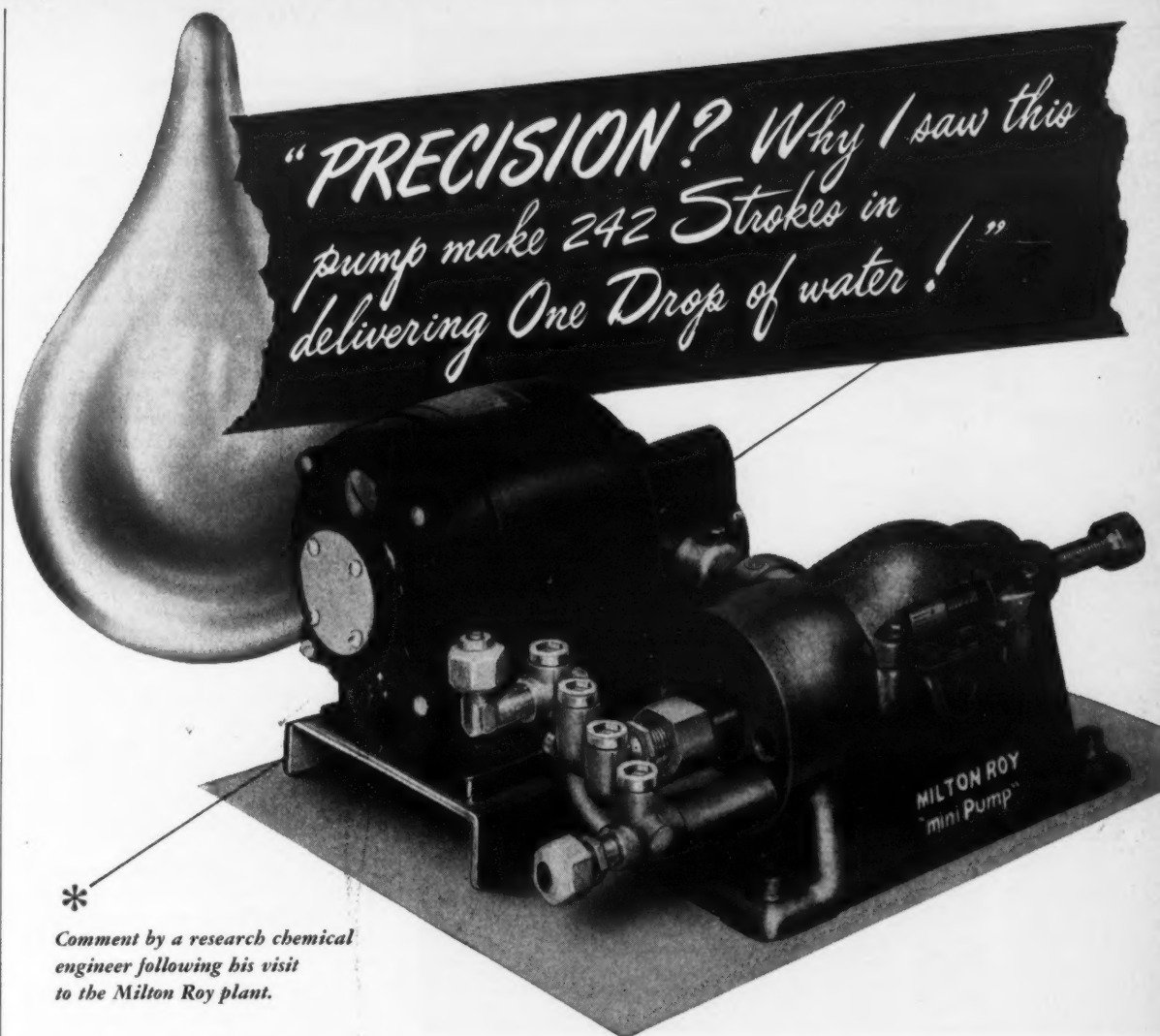
Issued on letterhead request to Polyken Industrial Tape Department of Bauer & Black, Dept. CP, 222 W. Adams St., Chicago 6, Ill.

Uses two wires to send reading unlimited distances

Two-color, eight-page bulletin describes an instrument transmitter which can send metering and control information for unlimited distances on a two wire system. Using 25 photographs and drawings, the bulletin describes features and operation of this transmitter and its receiver. Applications to Venturi tube, nozzle, orifice, weir and other flow metering devices are shown. Other illustrated applications are proportional control of chemical feed, pump control, liquid level measurement, pressure, and temperature control.

Bulletin 230-H4 is issued by Builders-Providence, Inc., Dept. CP, 387 Harris Ave., Providence 1, R.I. When inquiring specify CP 8209 on handy form, pages 2 & 3.

DECEMBER, 1951



Comment by a research chemical engineer following his visit to the Milton Roy plant.

...and what this man saw was no rigged-up "special" unit—but a standard Milton Roy Controlled Volume "miniPump", operating under normal conditions. Here are a few of the factual details:

This pump is the miniature member of the family of Milton Roy Controlled Volume Pumps—it measures less than a foot square, and weighs no more than 40 pounds—motor and all! It is available in motor-driven or air-powered types—in Simplex, Duplex, and Multiplex

models. Built with watchmaker's precision, it handles any clear liquid in delivery rates ranging from 3 to 3200 milliliters per hour—against pressures up to 1000 psi! Its maximum speed is 100 strokes per minute—and calibrated stroke length adjustment is easily made while operating from zero to full capacity—with pump efficiency high over the entire range. The step-valve liquid-end, fully covered by Milton Roy patents, is stainless steel.

Let's consider a few uses for this

dramatic little pump: in laboratory and research work; in pilot plants; in instrumentation and continuous processing; in industrial production of soaps and perfumes, food, petroleum, pulp and paper—wherever precise quantities of clear liquids in small amounts are required!

Write, now, for complete information to Milton Roy Company, or check your local classified telephone directory for your nearest Milton Roy representative.



MILTON

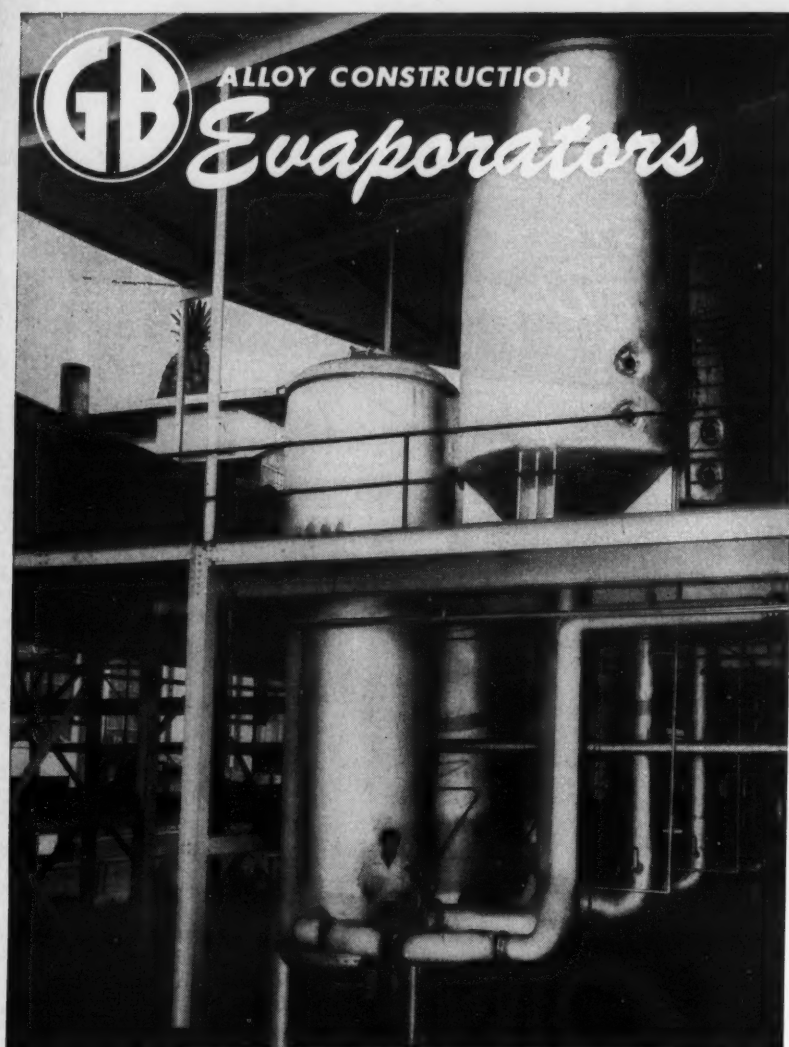
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MANUFACTURERS OF CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

When inquiring check CP 8210 on handy form, pgs. 2-3



Many new process developments necessitate alloy construction to assure freedom from corrosion and product contamination. In the Hawaiian Pineapple Company's efficient, modern plant, the Goslin-Birmingham quadruple effect evaporator, one view shown above, plays a part in upholding their high standards of purity.

Some of the features of installation are—

- All Type 316 Stainless Steel construction
- Ample capacity for peak loads
- No entrainment losses
- Fully automatic operation

If special alloy construction will improve your product or reduce costly replacements, be sure to call on G-B's highly skilled engineers for recommendations. Your inquiry will receive prompt attention.

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EVAPORATORS. CONCENTRATORS. CONDENSERS. FLAKERS. FILTERS.
STANDARD AND SPECIAL EQUIPMENT FOR CHEMICAL PROCESS INDUSTRIES

When inquiring check CP 8211 on handy form, pgs. 2-3

NEW LITERATURE

Speed heavy handling with trackage

Particularly applicable for moving rolls, reels, bales, barrels, bins, drums, raw materials, etc., is the traction system described in this 12-page catalog. Standard track sections are 10 feet long and come all ready to put in position in prepared floor trenches. They are not interlocked and thus can be lifted out for inspection and cleaning.

Track sections can be sunk into floor trenches either 3 or 4" deep, depending on type of equipment needed, which in turn is determined by weight of loads to be moved. Systems can be manually or electrically operated.

Photographs detail use of equipment. Catalog Form A-51 is issued by Engineering Products Co., Inc., Dept. CP, 122 S. Michigan Ave., Chicago 3, Ill. When inquiring specify CP 8212 on handy form, pages 2 and 3.

Shows steam generators, 20 to 600 bhp

Catalog of 16 pages with fold-out cover describes and illustrates construction and operational features of steam generators with capacities from 20 to 600 bhp. Profusely illustrated with photos, schematics and cutaway drawings. Charts provide engineers with essential data on dimensions, specifications and test results.

"Superior Steam Generators," issued by Superior Combustion Industries, Inc., Dept. CP, 1475 Broadway, New York 18, N. Y. When inquiring specify CP 8213 on handy form, pages 2 and 3.

Contains information on vacuum breakers

Operating details and specifications of vacuum breakers are discussed in this one-page specification sheet. The equipment finds application in protecting tanks, boilers, reactors, stills, re-torts and other closed vessels against vacuum build-up which would allow atmospheric pressure to stave in or damage them.

Specifications show availability in sizes 1/2 to 3", along with materials of construction, maximum operating pressure, dimensional data and a relief capacity table. Specification Sheet 413-1 is issued by Minneapolis-Honeywell Regulator Co., Brown Instruments Division, Dept. CP, Station 40, Wayne and Windrim Ave., Philadelphia 44, Pa. When inquiring specify CP 8214 on handy form, pages 2 and 3.

How to save Labor and Money by Centralizing Lubrication

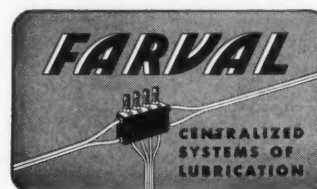
FOR more than 20 years, Farval has been saving manpower and money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Bulletin 25 gives you the facts and figures to apply to your own lubrication problems. The Farval Corporation, 3257 East 80th St., Cleveland 4, Ohio.



Write for **FREE**
Bulletin 25



When inquiring check CP 8215 on handy form, pgs. 2-3



Here's an **AMAZING BRAND NEW SAFETY SIGN** that will be welcomed by Safety Men! Brady Safety Signs stick to wood, glass, metal, concrete, etc. without moistening. May be applied to any clean surface in a jiffy. No screws, nails, bolts or skilled help necessary. All you do is peel from card, apply where wanted and the sign is up to stay.

Brady Safety Signs are made of durable cotton cloth, Silicone Coated to resist dirt, grime and moisture. CONFORM TO ASA Standard Z35.1-41. Select your requirements from a complete catalog of standard safety messages. Cost only a few cents per sign. Immediate delivery. Specials made to order.



When inquiring check CP 8216 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Detects metals in materials of sheet form

Indicating the pressure of metallic particles as small as 0.039" in diameter, either magnetic or non-magnetic, is the function of the detector treated in this four-page catalog. This protecting device is designed for inspection of thin sections of material in sheet form, such as strips of chewing gum, record compounds, rubber products, etc. Material to be inspected is fed through an aperture (three model sizes measure 1, 1 $\frac{3}{8}$ or 4 inches high by 20 inches wide at the aperture) by a conveyor belt, chute or some other type of materials-handling equipment.

As a metal particle is detected, a relay is activated which in turn may be used to actuate any type of removal device. Explanatory material covers general details of installation and operation. Specification data are brief. Catalog E-61 is issued by Eriez Manufacturing Co., Dept. CP, Erie, Pa. When inquiring specify CP 8217 on handy form, pages 2 and 3.

Designers will be interested in bellows, metal hose info

Latest 16-page, 2-color catalog by maker of ferrous and non-ferrous alloy bellows and flexible metal hose has been prepared to give complete specifications and description of products. Presentation is slanted to the product designer's needs.

Bellows find applications in steam traps, instruments, valves, shaft seals, etc. Recommended uses are given for flexible metal hose. Profusely illustrated Cat CMH-123 NPH is issued upon letterhead request to the Chicago Metal Hose Corporation, Dept. CP, Maywood, Ill.

Flame-spraying with polyethylene provides corrosion resistance

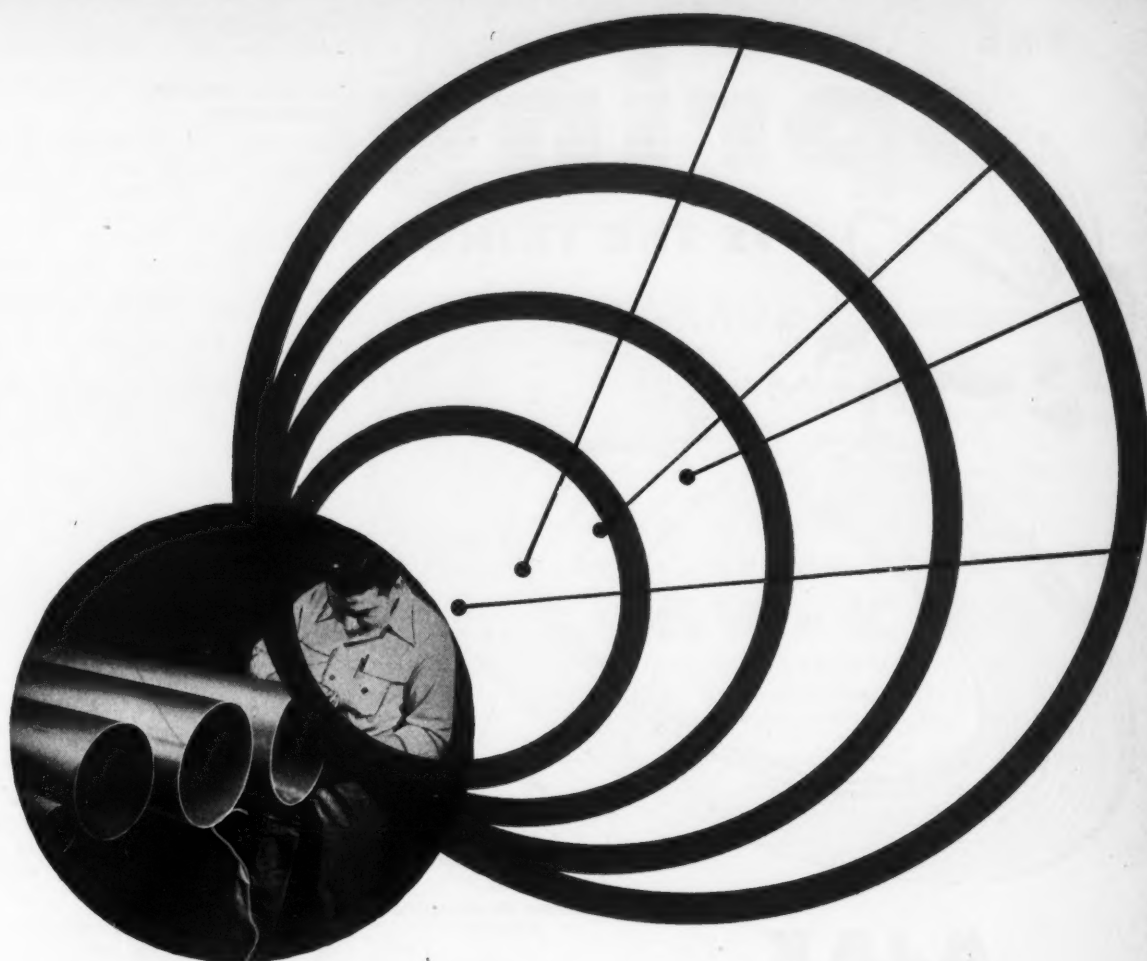
A method of protecting metallic surfaces from corrosive action of many organic and inorganic chemicals is explained in 8-page illustrated booklet. Method involves flame-spraying with polyethylene. Necessary equipment, plate preparation, application technique, and safety precautions are discussed. Laboratory test data, which indicate both effectiveness and limitations of polyethylene coatings, are included.

"For Corrosion Resistance — Flame-Spray with Polyethylene" is issued by Linde Air Products Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 8218, on handy form, pages 2 and 3.

Outlines facilities for steel, alloy plate fabrication

Manufacturer's engineering and fabricating facilities are illustrated and described in 8-page bulletin. Shown are tanks, kettles, towers, reactors and similar equipment. Tables and charts outline maximum dimensions that can be handled, ranges of plate thickness in various alloys, and the wide range of metals with which manufacturer has had experience.

"Plate Fabrication," issued by The Colonial Iron Works Co., Dept. CP, 17631 St. Clair Ave., Cleveland 10, Ohio. When inquiring specify CP 8219 on handy form, pages 2 and 3.



engineers who design for long life specify TRENTWELD

Here are 7 reasons why TRENTWELD is better

1. Largest variety of sizes — 4 $\frac{1}{2}$ " to 30" inclusive
2. Finished tubing... machine-formed, machine-welded, machine-sized for uniformity
3. Made in a tube mill by tube experts
4. Made from tested cold rolled sheets... completely fused into finished tubing without added rod metal
5. No zone of weakness for corrosion to attack
6. Uniform section, metallurgically correct
7. Available for fabrication with any fittings

TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN

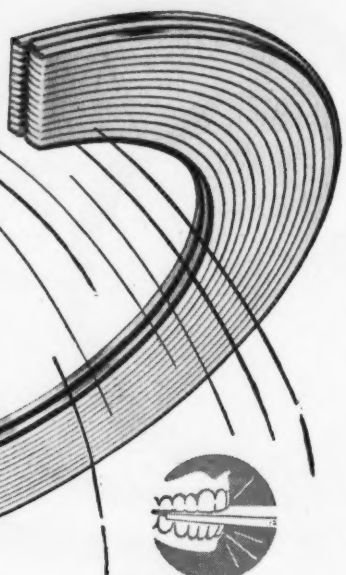
(Subsidiary of Crucible Steel Company of America)

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THE

Spring

IS THE THING!



KNIFE-EDGES BITE INTO FLANGE SURFACES



PRESSURE-SEALED



THEY BREATHE WITH VARYING PRESSURES AND TEMPERATURES



LIGHTER BOLT LOADS. SAFER SEALS



NO DRIP—NO SQUIRT—NO HISS

AJAX

SPIRAL WOUND GASKETS

The gaskets with more "bounce to the ounce" of bolt load. Built-in resilience for positive permanent seals.

Made for all types of pipe flanges, pressure vessels, boiler manholes, handholes, tube caps, water walls, economizers and other boiler accessories. Ask your supply house. AJAX gaskets, are universally available through Industrial Distributors.

HEAT EXCHANGER GASKETS

Double jacketed metal-asbestos, precision made to specifications in any desired size, shape or metal. Estimates furnished on receipt of details. Write



UNITED STATES GASKET COMPANY

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Camden 1, N. J.

Leading Fabricators of "TEFLON" for the Chemical, Process and Electronic Industries.

When inquiring check CP 8221 on handy form, pgs. 2-3

NEW LITERATURE

Bulletin explains colorimeter

Illustrated, 20-page bulletin details parts and operation of a photoelectric colorimeter. Treatment is very complete for a great many subjects including, various systems of the instrument, operation as a direct reading colorimeter, turbidity measurements, illumination, various pick-up units for special purposes, accessories, filters, and others.

References are made throughout the bulletin so that detailed information can be found. Bulletin 420 on the Lumetron Colorimeter is issued by Photovolt Corporation, Dept. CP, 95 Madison Ave., New York 16, N. Y. When inquiring specify CP 8222 on handy form, pages 2 and 3.

"Time-and-place utility" of material handling

Relying exclusively on pictures and illustrations, this 22-page publication presents a discussion of a subject termed "time-and-place utility". Place Utility is defined as: "The value added to anything because it is available where it is needed"; while Time Utility is: "The value added to anything because it is available when it is needed."

This issue is concerned with the means of achieving these values through material handling techniques and machines. Starting with the receiving dock, these techniques are outlined through storage, processing and assembly, warehousing and finally shipping.

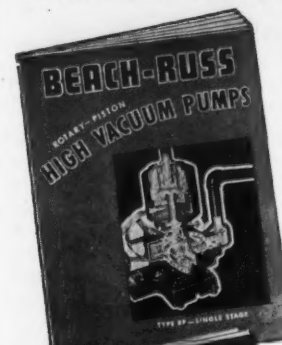
"Material Handling News, Vol 10; No. 2" is issued by Industrial Truck Division, Clark Equipment Co., Dept. CP, Battle Creek, Mich. When inquiring specify CP 8223 on handy form, pages 2 and 3.

Glass-reinforced plastic has many uses

One-page sheet surveys electrical, chemical and structural applications of glass-reinforced plastics materials. Tabulation of chemical properties show: water absorption, 0.17%; acid resistance, excellent; solvent resistance, good; and temperature resistance, 300°F.

Manufacturer's product is fabricated in four forms: sheets, laminated shaped parts, molded parts and rods. All colors are available. "Dynakon Glass-Reinforced Plastics" is issued by The Dynakon Corp., Dept. CP, 5509 Hough Ave., Cleveland 3, Ohio. When inquiring specify CP 8224 on handy form, pages 2 and 3.

Data on Vacuum Operations



These two catalogs cover the range in vacuum applications from 10 mm. to 10 microns or better, for distillation, extraction, impregnation, metallizing, deairing, electronic evacuation, pick-up and place or position and hold and all the many other uses of vacuum in the lab or in the plant.



BEACH-RUSS ROTARY VACUUM PUMPS

offer you faster pump down, superior mechanical efficiency and much longer service life.

Write for these two catalogs and ask us to put your name on the mailing list for "Much Ado About Nothing"... our regularly issued house organ that will help you keep posted on the newest ideas in the use of vacuum in industry.

BEACH-RUSS COMPANY

46 CHURCH STREET - NEW YORK 7, N. Y.

When inquiring check CP 8225 on handy form, pgs. 2-3

Calling all users of Speed Reducers!



Get the new
Cleveland Book FREE

Bulletin 130 gives rating tables, dimensions and other data you need in selecting the right sizes in standard worm-gear speed reducers. Ask for your copy.

New bulletins on other types of Cleveland worm gear drives and worm-gear sets also available. Outline your needs. The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, Ohio.



CLEVELAND
Worm Gear
Speed Reducers

When inquiring check CP 8226 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Photos, specs, applications of floor machines

Floor machines and vacuum cleaners are the subject of six-page bulletin. Machines are illustrated fully. Cut-away views and shots of disassembled machines point out features. Specifications of all models are tabulated. One page is devoted to attachments for vacuum, photos showing how they are employed. Another page has illustrations of attachments for floor machines. Last page carries listing and brief description of each of manufacturer's floor chemicals.

"Multi-Clean Presents" is issued by Multi-Clean Products, Inc., Dept. CP, 2277 Ford Parkway, St. Paul 1, Minn. When inquiring specify CP 8227 on handy form, pages 2 and 3.

Specifies glass-lined fittings, pipe and valves

Glass-lined pipe and fittings are shown and specified in 12-page 2-color bulletin. Included are standard pipe, flanges, Glassalloy pipe, porcelain spacers, expansion joints, jacketed pipe, multiple inlet and sight valve assembly, adapters, reducers and stuffing boxes, standard fittings. Valves shown include tank outlet, lever-operated, pop safety, diffuser and line. Sectional views, and dimensional drawings and tables are spotted throughout the pages. Photographs are included.

Bul 886 is issued by The Pfaudler Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. When inquiring specify CP 8228 on handy form, pages 2 and 3.

Section views and photos explain balanced compressor design

Balanced design feature of this motor driven compressor is achieved by mounting cylinders in pairs — one on either side of the crankcase — and connecting them to the crankshaft with throws 180° apart. Handsomely printed, this 49-page bulletin utilizes many photographs and cross-sectional views in featuring the design. Other expository matter covers the component parts of the compressor units and fabricating techniques — forging and machining of the crankshaft.

Dimensional data are given on various models, and numerous illustrations and photos show applications as in air compressor, soot blower, chemical and refining, gas booster and gas storage services. Bulletin 118 is issued by Clark Bros. Co., Inc., Dept. CP, Olean, N. Y. When inquiring specify CP 8229 on handy form, pages 2 and 3.

Medium volume copying unit develops at 4 ft/min

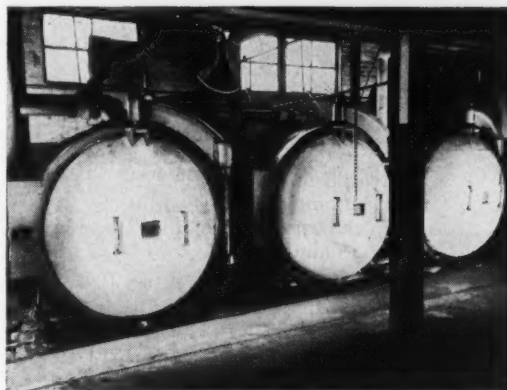
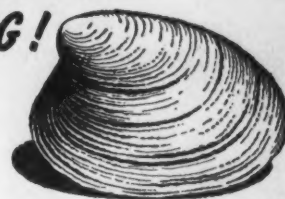
Prints can be made in 20 color combination — black, brown, red or blue lines on white, pink, blue, green or yellow paper — with the copying machine described in this four-page booklet. Of medium volume capacity, its developing unit processes film at a speed of 4 feet per minute. Printing widths up to 46 inches are handled. Photographs depict its operation, and specification material gives pertinent information on this unit which measures 56" high, 70" wide and 56" deep.

Booklet A-2009 is issued by Charles Bruning Company, Inc., Dept. CP, 100 Reade St., New York 13, N. Y. When inquiring specify CP 8230 on handy form, pages 2 and 3.

QUICK OPENING!



SURE CLOSING!



BLAW-KNOX QUICK OPENING DOORS

for curing chambers, vulcanizers, and similar equipment, are *quick—tight—boltless*. In diameters up to 10 ft., they may be used on pressures up to 250 psi. They are rim-locking; manually or mechanically operated.

This is only one of a long line of Blaw-Knox standard equipment items for the Process Industries. Write for Blaw-Knox Bulletin No. 2355.

PROCESS EQUIPMENT DEPARTMENT

BLAW-KNOX

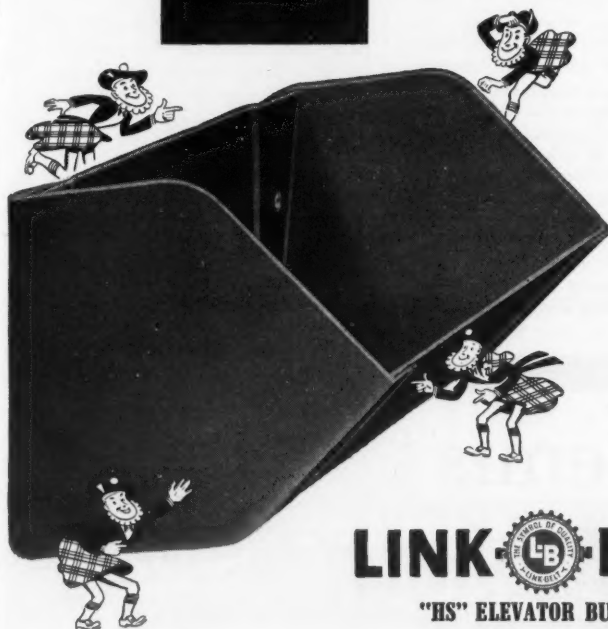
DIVISION OF BLAW-KNOX COMPANY

2074 FARMERS BANK BUILDING, PITTSBURGH 22, PA.

Other Offices in Principal Cities

When inquiring check CP 8231 on handy form, pgs. 2-3

get "HS" buckets for longer life at no extra cost



The next time you buy buckets, be sure you get this advanced design by LINK-BELT

LINK-BELT "HS" Buckets give you the ultimate in centrifugal discharge bucket elevator operation . . . at either high speeds or nominal speeds. High bucket ends minimize spillage. Low front lip provides efficient pick-up.

And "HS" Buckets last longer: Bucket ends, same gauge as body, are folded over body for added strength and rigidity. Back of bucket is crimped for end fold, giving smooth, flat back surface contact. Smooth interior permits quick, clean pick-up and discharge.

Best of all, "HS" Buckets' longer life means lower overall costs for you. For complete information, write for Book 2299.

LINK-BELT

"HS" ELEVATOR BUCKETS

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, factory branch stores and distributors in principal cities.

12,308

When inquiring check CP 8232 on handy form, pgs. 2-3

NO. 3 OF A SERIES

ON HOW TO

Stretch a MULTIWALL Paper Bag

Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here are some of the ways to stretch them . . .



Use of Hand Trucks . . . Trucks (and chutes and conveyors) should be free of protruding nails, splinters, etc.

Two-wheel trucks should have wide, extended lips, as narrow-blade lips cut into the sacks. Wood or metal lip extensions may be added. Sacks should be piled flat. Small wooden pallets may be used if the truck lip is adequate.

On four-wheel trucks, sacks should be stacked flat and even with the truck edges, with the end sacks interlocked.

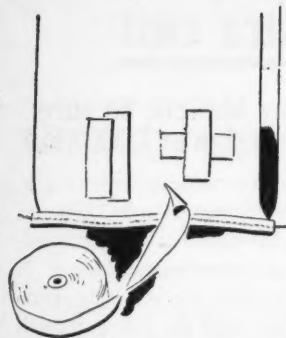


How to Lift and Carry . . . One man should pick up the sack with his hands underneath it, preferably at diagonal corners. Two men should lift the sack with the hands underneath it, supporting the four corners. Never grip or pull at the corners. Never drag the sack across the floor. Never, with a tied closure, pull at the closed end. Carry the sack with the edge resting against the body, or flat on the shoulder.

How to Repair or Overslip Damaged Bags

If seriously damaged, slip an overslip over the damaged bag (with contents intact), then close with a wire-tie or string, or roll the top and staple it. If the damage is minor, or an overslip is not available: 1. Straighten paper near the tear; place torn ply, or plies, in original position; clean off any loose material or dirt. 2. Apply moistened gummed tape, cut 4 or 5 inches longer than the tear. Use single, overlapping or crossed patches, depending on size and kind of tear. 3. If more than one ply is severely ruptured, patch each ply separately.

A 3-inch, 40-lb. or 50-lb. gummed kraft tape is satisfactory. Carry repaired bags with the patched side up.



Want the Whole Story? Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

Maybe Cotton Bags are Your Answer . . . if you can't get all of the multiwalls you need. Cotton bags are available . . . and Bemis is the leading cotton bag source.

Bemis



St. Louis 2, Missouri

When inquiring check CP 8233 on handy form, pgs. 2-3

NEW LITERATURE

Gives machining tips on nickel alloy steels

Information here will assist the user of nickel alloy steels in determining the most economical and satisfactory combination of microstructure, tool form, cutting speed, rate of feed, etc., for each type of machining operation.

It is pointed out in this 24-page bulletin that the manner in which a given steel responds to the usual machining operations is determined by the microstructure rather than by chemical composition. Low, medium and high carbon alloy steels are compared as to machinability in various operations: turning, broaching, drilling, tapping and threading, milling, sawing, and grinding.

Additional material is presented in the form of 11 tables and 7 detailed drawings. "The Machining of Nickel Alloy Steels" is issued by The International Nickel Co., Inc., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 8234 on handy form, pages 2 and 3.

Four wheel selections with each truck . . .

A selection of four types of wheels is offered with each of four hand trucks described and illustrated in 2-color bulletin. Truck types available are: double handle, open nose; double handle, plate nose; single handle, open nose; and, double handle, plate nose. Tables give complete specifications of these trucks which have maximum capacity of 500 lb. Bulletin WEL-51 is issued by The Rapids-Standard Company, Inc., Dept. CP, Grand Rapids 2, Mich. When inquiring specify CP 8235 on handy form, pages 2 and 3.

Monoglycerides find wider use

A description of the monoglycerides of the fatty acids such as stearic, oleic, lauric, ricinoleic, etc., is given in this reprint of an article along with methods of manufacture. The varying compositions and physical properties are outlined, and a table of specifications is included.

Applications and uses of the monoglycerides in the following industries are noted: drug, food, cosmetic, textile, rubber, paint, plastic, resin, ink, detergent, adhesive and dye. "Monoglycerides Finding Wider Uses in Industry" is issued by Glyco Products Co., Inc., Dept. CP, Brooklyn 2, N. Y. When inquiring specify CP 8236 on handy form, pages 2 and 3.

NEW THREAD COMPOUND

Licks Stud Freezing Even at 1800° F.!

SAFE for all high temperature applications!

SAFE for Stainless and Alloy Steels, too, will not pit or corrode!

IDEAL as a cutting compound to prevent galling of Stainless Steel!

Make a convincing test of Fel-Pro C-5 "Hi-Temp" Thread Compound at our expense. Then you can be sure that C-5 will do everything we say it will do. See how it cuts heater dismantling time—how it cuts costly stud breakage and eliminates pitting. Then you will standardize on C-5 just as have some of the nation's largest refineries, utilities and process industries. Write for FREE Sample and data sheet TODAY!



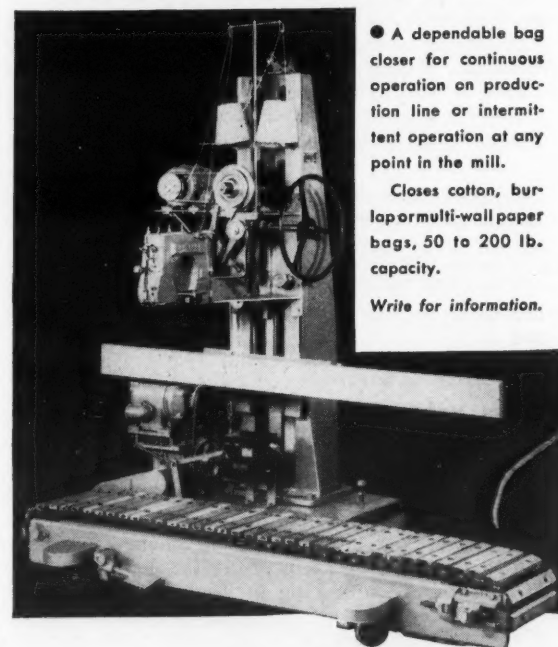
**FREE
TEST SAMPLE!**
Send for YOURS
TODAY

**FEL-PRO
C-5
"HI-TEMP"
THREAD
COMPOUND**

FELT PRODUCTS MFG. CO.
1515 CARROLL AVENUE • CHICAGO 7, ILLINOIS

When inquiring check CP 8237 on handy form, pgs. 2-3

FAST, FLEXIBLE, HEAVY DUTY BAGGER CONSOLIDATED Model 105



● A dependable bag closer for continuous operation on production line or intermittent operation at any point in the mill.

Closes cotton, burlap multi-wall paper bags, 50 to 200 lb. capacity.

Write for information.

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 13, N. Y.

When inquiring check CP 8238 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Guide to filter paper use for 400 compounds

In addition to descriptions of filter papers and accessories, this 36-page catalog presents a guide to the use of filter papers. This listing designates the manufacturer's grade of paper to be used in filtering each of approximately 400 compounds, including various halides, sulfides, hydroxides, phosphates, etc. Other filtering information explains methods of folding paper, use of filter pulp, and speed and retention characteristics of different papers.

Among the specialties detailed are filter discs, extraction thimbles and weighing paper for use with analytical balances. Catalog 70 is issued by Carl Schleicher & Schuell Co., Dept. CP, Keene, N. H.

Covers heat processing, required equipment

Twelve-page bulletin is concerned with techniques and equipment for heat processing. This term covers straight heating, baking, drying, melting, etc. Bulletin points out use of radiant heat systems on flowing liquids, conveyORIZED materials, in-line materials (rods, pipes, billets and tubing), moving strips, batch vessels, car bottom kilns, others. Captioned photos show use of these systems in various industries.

Also in bulletin is section on dehydrators for instrument and process air and other gases, filters for air lines, flow rate indicator for gases, and liquid separators. Bul S-7.1 is issued by Selas Corporation of America, Dept. CP, Philadelphia 34, Pa. When inquiring specify CP 8239 on handy form, pages 2 and 3.

Brief but thorough discourse on pyrometry

This two-page reprint of an article from *Metal Progress* (November, 1951) covers briefly the considerations involved in the use of the sensing elements of temperature measuring devices. It divides sensing elements into two general classes, one which attempts to evaluate temperature from some aspect of the radiant energy received such as optical, radiation and color pyrometers. Thermometers, thermocouples, resistance thermometers and chemical signals typify the other class, because they use, according to the author, a "contact" method.

The various factors which affect measurement by instruments of both types are discussed in the remainder of the article. "Notes on Pyrometry," by Dr. G. M. Wolten, is issued by Tempil Corp., Dept. CP, 132 West 22nd St., New York 11, N. Y. When inquiring specify CP 8240 on handy form, pages 2 and 3.

Flowsheet, text explain crushing in aluminum industry

The part that crushers play in the aluminum industry is emphasized in attractive three-color, 20-page booklet. Middle two pages present schematic flow diagram of bauxite refining from ore to alumina. Text and photos deal with crushing of bauxite, limestone, coke, carbon and cryolite. Two pages are devoted to discussion of how manufacturer's crusher works, and to features such as reversibility and two-zone crushing.

"Crushing in the Aluminum Industry" is issued by Pennsylvania Crusher Company, Dept. CP, 1700 Liberty Trust Bldg., Philadelphia 7, Pa. When inquiring specify CP 8241 on handy form, pages 2 and 3.

DECEMBER, 1951

NEW...TEFLON BELLOWS CONNECTOR



- CORROSION RESISTANT
- HEAT RESISTANT
- ELECTRICALLY NON-CONDUCTIVE
- FLEXIBLE EVEN AT MINUS 94° F.
- AS STRONG AT 482° F. AS AT 70° F.
- NON-ABSORBENT

The answer to difficult piping problems in your plant

Here is the new "JOHN CRANE" Teflon Bellows Type Connector which will solve many problems in the chemical industry. Fabricated of chemically inert Teflon, it economically serves as a vibration dampener as well as an expansion joint—connects misaligned couplings. The unusual properties of Teflon allow the expansion joint to be flexed repeatedly without damage.

End flanges of the joint are actually French-type envelope gaskets made integral with the joint for simple assembly between companion flanges... insures a tight, leak-proof seal on installations. John Crane Bellows Connectors are made to your specifications in a wide range of sizes to fit your particular needs.

Consult with "JOHN CRANE" engineers now on the uses of remarkable new Teflon in effectively handling corrosive liquids and gases.



Maximum expansion and contraction provided.



French-type gasket provides easy installation.



Withstands repeated flexing without damage.

Write for informative catalog on Teflon and its applications.





CRANE PACKING COMPANY

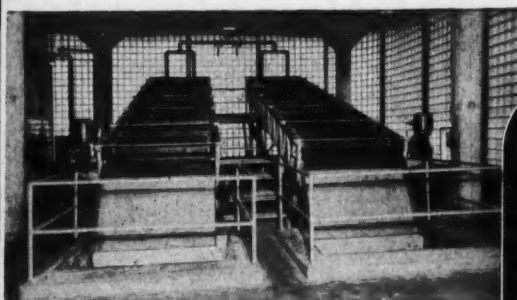
1821 CUYLER AVENUE • CHICAGO 13, ILLINOIS

Offices in All Principal Cities in United States and Canada



When inquiring check CP 8242 on handy form, pgs. 2-3

"DAVENPORT" CONTINUOUS PADDLE DEWATERING SCREEN



Recovering Waste Pulp

If concentrating the suspended solids is a problem in your process, it would pay you to investigate the Davenport Continuous Inclined Paddle type Dewatering Screen. Write for our complete catalog.

For quick reference see "Sweet's 1952 Processing Industries" file.

**DAVENPORT MACHINE
and FOUNDRY COMPANY**
DAVENPORT 4, IOWA

When inquiring check CP 8243 on handy form, pgs. 2-3

DAVENPORT
De-watering Presses
and Screens.

ROTARY
Steam Tube, Hot
Air and Direct Fire
Dryers.

Water Tube and
Air Coolers.

HOW TO cut costs if you handle BULK MATERIALS

HIDUTY*
LIFT
TRUCKS

Work for Less!

The problem of handling bulk materials can be simplified by using HIDUTY LIFT TRUCKS with new POWER BUCKET ATTACHMENT. (Re-converts to standard fork truck in a matter of minutes). Fast and easy to operate, HIDUTY LIFT TRUCKS can effect remarkable savings in labor costs.

Economical to Operate
HIDUTY LIFT TRUCKS are the most economical power trucks you can use. There's a practical size to fit your needs!

Economical to Maintain
Exclusive HYDROFLEX CLUTCH gives longer trouble-free operation than any other lift truck clutch. . . positively will not grab or chatter. Practical mechanical design and few moving parts make HIDUTY LIFT TRUCKS easy to maintain.

HIDUTY LIFT TRUCKS are manufactured by
TRANSITIER TRUCK COMPANY
2477 N.W. 23rd Avenue, Portland 10, Oregon

When inquiring check CP 8244 on handy form, pgs. 2-3

NEW LITERATURE

Articles on motors and drives

In its 24 pages, this publication presents a number of articles on motor design and magnetic drives and their application in different installations. Featured is a story on how motors for oil pipe line pumping were designed and built. Another article covers process of manufacturing Portland cement and the use of magnetic drives on cement kiln fans.

Fully illustrated throughout, the bulletin also includes an article on the processing of raw cotton with a flow diagram of cotton production; one on the selection of a control for large AC motors, accompanied by electrical tables; and an article explaining a magnetic drive speed control along with operation and application information.

Bulletin 200-SYN-34 is issued by Electric Machinery Mfg. Co., Dept. CP, Minneapolis 13, Minn. When inquiring specify CP 8245 on handy form, pages 2 and 3.

One dozen pictures show temp bulbs

Twelve drawings included in four-page specification sheet show the principal types of thermometer bulb styles for pneumatic temperature controllers and recorders. Tabular breakdown shows which style is preferred for each of manufacturer's models. Other sections explain general specifications, thermal compensation, available ranges and other pertinent points.

Specification Sheet 600 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8246 on handy form, pages 2 and 3.

Vibrators for locations where noise is factor

Meeting the need where material has to be moved, settled or packaged noiselessly is the vibrator detailed in this four-page catalog. Five different models are specified — vibrating at approximately 2000, 1500, 1150, 935 and 825 cycles per minute at a continuous line pressure of 80 psi.

Various installation photographs are presented along with mounting instructions for the equipment. Catalog 108 is issued by The Cleveland Vibrator Co., Dept. CP, 2828 Clinton Ave., Cleveland 13, Ohio. When inquiring specify CP 8247 on handy form, pages 2 and 3.



MOVING MOUNTAINS

with
**Spencer
Vacuum**

Yes — Spencer Vacuum is moving chemicals, hot materials and just plain debris by the ton. But the biggest mountains of industry are plant housekeeping and sanitation. Whether it's 500 acres in a chemical plant to be cleaned every night, or the few specks of dust

that cause rejects in ceramic and instrument plants — Spencers are doing the job with less man power.

Ask for Bulletin No. 144—it describes 132 applications.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT



439-M

When inquiring check CP 8248 on handy form, pgs. 2-3

Save time! Prevent accidents!

LIFT AND DUMP
MECHANICALLY

**BAGS
BARRELS
DRUMS
BOXES**

REDUCE HANDLING COSTS with a CESCO Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



WRITE
FOR
CATALOG

CESCO SKIP HOIST DUMPER

When inquiring check CP 8249 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Boiler feedwater treatment for a city steam plant

This 11-page report concerns the selection of a demineralizer for treatment of boiler feedwater to be used in a high-pressure, high-make-up power and steam generating plant. Tables and related information show the comparative studies made on 3-bed and 2-bed demineralizing systems and styrene versus phenolic cation exchangers. Layout and design features of the system, materials of construction and instrumentation of the installation are described.

Report also describes the results obtained with this unit put into operation by the Philadelphia Electric Co. "Boiler Feedwater Treatment for a High-Pressure Steam Plant" is issued by Graver Water Conditioning Co., Dept. CP, 216 West 14th St., New York 11, N. Y. When inquiring specify CP 8250 on handy form, pages 2 and 3.

Features vacuum processing, where used and why

Components of complete vacuum processing systems are detailed in 12-page, illustrated catalog. Vacuum dryers, freeze-drying equipment, vacuum impregnation equipment, vacuum metallizing components, solvent extractors, vacuum pumps, valves and gauges are shown. Drum dryers and flakers are also covered, plus water stills. Applications and specifications for most of the equipment are included. Back cover lists 11 other associated catalogs, with brief discussion of contents.

Cat 715, issued by F. J. Stokes Machine Company, Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. When inquiring specify CP 8251 on handy form, pages 2 and 3.

Recommendations for welding steel castings

A valuable guide to use in establishing reliable welding procedures for steel castings is this 40-page report. Bound in three sections, the manual includes tabular classification of electrodes, trade-name products and manufacturers for all classes of electrodes. Recommended procedures for carbon steel and low alloy steel castings are described along with numerous drawings illustrating specific approved welding sequences.

To obtain "Recommended Practice for the Welding of Steel Castings", remit 35c direct to Steel Founders' Society of America, Dept. CP, 920 Midland Bldg., Cleveland 15, Ohio.

Fully describes carbon and graphite products

Sizes and physical properties of carbon and graphite products are given in this 20-page catalog, along with tables on corrosion resistance and heat conductivity. Illustrated are various types of impervious graphite heat exchangers, pipe, fittings and valves, centrifugal pumps, towers and accessories; carbon or graphite structural shapes, brick and cement, electrode furnace electrodes and ground anodes for cathodic protection.

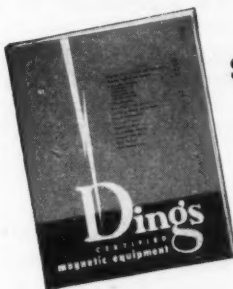
Catalog Section S-5005 is issued by National Carbon Co., a Division of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 8252 on handy form, pages 2 and 3.



DINGS magnets offer a variety of ways to meet problems caused by tramp iron—problems such as fires, explosions, machinery damage or product purification.

One of these ways is the ideal way and its choice is a joint affair—yours and ours. Outline your application to Dings. You can rely on their unbiased recommendation.

The magnets listed are but part of a complete line of magnetic separators which includes magnets for chutes, ducts, wet applications or fully self contained units. For a description of the complete line...



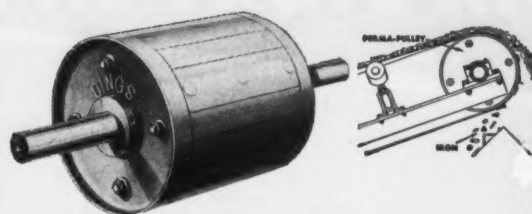
Send For Catalog
C-5000 A

In it can be found
the answer to any
magnetic separation
problem.

DINGS MAGNETIC SEPARATOR CO.
4731 W. Electric Avenue, Milwaukee 46, Wis.

Dings

When inquiring check CP 8253 on handy form, pgs. 2-3



1. DINGS PERMA-PULLEYS

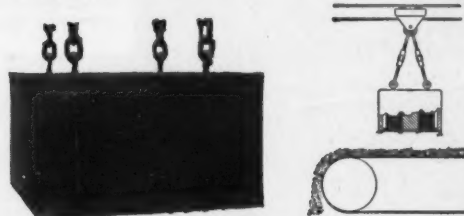
INTENSELY concentrated magnetic strength near the surface makes this the magnet to use where burden depths do not exceed 3". Installed as head drive pulley, tramp iron removal is fully automatic, simple. Non-electric, permanently energized it can be installed and forgotten. Catalog C-1007 A gives details.

Powerful, air-cooled electro magnetic pulleys are available for burden depths exceeding 3". Low operating cost, long life and extreme power characterize this work-horse of the Dings line. Catalog C-1001 A.



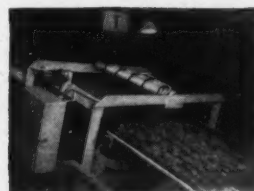
2. DINGS PERMA-PLATES

PERMA-PLATES are the simplest, most economical magnets available. Installed over the conveyor belt, they are extremely effective on shallow burden depths. Non-electric and permanent. Perma-Plates can be made self-cleaning. Catalog C-1205 A.



3. DINGS SUSPENDED RECTANGULARS

FOR the difficult jobs. Power close and power that searches down 12" to yank tramp iron out. Triple pole, double gap design gives edge to edge protection that can't be surpassed. Install horizontally, vertically or at an angle. Self-cleaning fully automatic models also available. Another model, the DEEP BURDEN Rectangular, is effective at distances to 18". Catalog 301-A.



4. DINGS MAGNETIC DETECTOR

THE Dings Magnetic Detector instantly signals when any magnetic object passes through the detector zone. Can be hooked up to sound an alarm and stop the belt. Ideal where the infrequency of tramp iron does not warrant the use of a magnetic separator, or where heavily loaded, high speed conveyor belts make iron extraction magnetically an impossible task.

SIX STORY LIFT...



DRACCO Pneumatic Conveyor installation transporting salt, bone-black, ground limestone and bone-meal to processing storage silos.

at 12 tons per hour!

The positive, continuous, high-speed action of DRACCO PNEUMATIC CONVEYORS transports all types of dry granular materials with maximum efficiency.

Walls, floors and vertical heights present no obstacle to DRACCO PNEUMATICS—and they require only the space of a 6-inch pipe. They handle all materials in a completely enclosed system, eliminating dust hazards, contamination, or material losses. They also reduce labor and maintenance costs to a minimum and permit buying of materials in low-cost bulk form.

DRACCO engineers, with over 35 years experience in reducing materials-handling costs, will gladly show you how DRACCO PNEUMATICS can increase your materials-handling efficiency. Call or write DRACCO CORPORATION, 4063 E. 116th St., Cleveland 5, Ohio, or 415 Lexington Ave., New York 17, N. Y.

AGENTS IN PRINCIPAL CITIES

CLEVELAND

DRACCO

NEW YORK

PNEUMATIC CONVEYORS

DUST RECOVERY EQUIPMENT • METAL FABRICATION

When inquiring check CP 8254 on handy form, pgs. 2-3

NEW LITERATURE

Application "shots" of floor topping

Over a dozen photographs show installations of manufacturer's mastic floor surfacing material in this four-page bulletin. Although capable of withstanding heavy traffic over a long period of time, it is actually a lightweight topping that does not burden the underpinning. A.I.A. File 23-D is issued by The Tremco Manufacturing Co., Dept. CP, 8701 Kinsman Road, Cleveland, Ohio. When inquiring specify CP 8255 on handy form, pages 2 and 3.

Cabinet designs illustrated

Four-page bulletin illustrates 21 standard cabinets for instrument panels. Unit construction and standard cutouts are specified. Halftones show a completed cabinet housing indicators and recorders.

Full dimensions and specifications are given in a series of engineering drawings. Bulletin P1-2 is issued by Wheelco Instruments Company, Dept. CP, Chicago 7, Ill. When inquiring specify CP 8256 on handy form, pages 2 and 3.

Carries items useful to the lab man

General bulletin pictures and describes synthetic-rubber pails for handling acids, portable self-contained blow torches with disposable fuel containers, precision-movement stop watches, a humidity indicating card which shows humidity at a glance, and several other items for lab use.

Bul 540 is issued by Andrew Technical Service, Dept. CP, 3805 N. Clark St., Chicago, Ill. When inquiring specify CP 8257 on handy form, pages 2 and 3.

Pictures 11 units of pump line

Pocket-size, 8-page bulletin describes the function, sizes and capacities of manufacturer's centrifugal pumps. Typical of the 11 pumps illustrated is one large unit for handling clear or pulpy liquids with a stated capacity of 3000 to 150,000 gpm. Other units are used for handling sewage and refuse, abrasive liquids and in dredge operations. Bulletin 183 is issued by Morris Machine Works, Dept. CP, Baldwinville, N. Y. When inquiring specify CP 8258 on handy form, pages 2 and 3.

Another Opportunity to Save Labor!

HANDLE
DRUMS
and
BARRELS
with a
SABIN
BARREL
TRUCK

ONE
MAN

Handles drum and barrel loads up to 800 pounds, saving cost of one or two helpers.

Simple to use. Just run truck up to container, hook on at top, and pull back on handle to pick up load. Third Wheel Feature provides better balance and added safety in moving loads.



WRITE FOR BULLETIN on full line of Sabin One-Man Barrel and Drum Trucks.

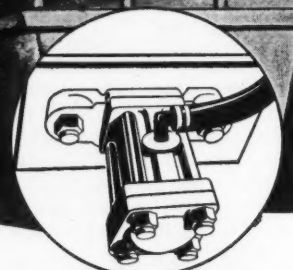
THE SABIN MACHINE CO.

6534 Carnegie Ave.
Cleveland 3, Ohio

When inquiring check CP 8259 on handy form, pgs. 2-3

MOVE MATERIALS

with
SPO
AIR VIBRATORS



Steady jam-free flow of granular or powdered materials is assured by use of SPO air vibrators. Delivering powerful hammer-like blows, these sturdy units prevent clogging and packing in bins, hoppers and chutes. Exclusive feature of all SPO air vibrators is a special corrosionproof bronze alloy cylinder liner which provides thorough lubrication, full-power starting, high-speed operation and maximum service life.

SPO offers a complete range of types and sizes designed to meet every vibration need. Blow for Blow, you can't beat SPO air vibrators!

For complete information, write today for Bulletin 50.

246 SI



INCORPORATED

6531 Grand Division Ave. • Cleveland 25, Ohio

When inquiring check CP 8260 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Tells how to meter liquids of almost any kind

Controlled volume pumping of almost any kind of liquid from viscous to light solvent is explained in 24-page, 2-color, illustrated bulletin. Abrasive slurries, hot or cold liquids, liquefied gases, and liquids with solids in suspension are within the range of the equipment shown. Pumps with capacities from thousands of gallons per hour down to lab-sized units with extreme accuracy are pictured and specified.

Reciprocating plunger design allows for capacity changes by length of stroke. This, in turn, can be easily adjusted through changing the off-centering of eccentric drive. Bulletin 251 is issued by Milton Roy Company, Dept. CP, 1300 East Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 8261 on handy form, pages 2 and 3.

Totally enclosed motor offered ventilated, non-ventilated

Construction details of a totally enclosed, fan-cooled motor are described in a new bulletin. Elimination of internal air passages and dirt-catching pockets makes the motor easy to keep clean. Cooling system suits it for duty where dust, dirt, fly ash, rain, snow, or corrosive gases are prevalent.

Motors of the same basic design are also available without fan or fan housing — as totally enclosed, non-ventilated units. Bul 51B7225 is issued by the Allis-Chalmers Manufacturing Company, 1114 S. 70th St., Milwaukee, Wis. When inquiring specify CP 8262 on handy form, pages 2 and 3.

Shows differential transformer as strain gauge

Two engineering data folders present information on strain gauges based on differential transformers. Both two-color, four-page publications are arranged to give principles of operation, features, types, and specifications.

Folder 62 deals with a torsion bar load cell where rotational forces are applied to a standard bar and angular deflection is picked up by the transformer.

Folder 65 is concerned with a cantilever beam load cell for measurements of thrust. In both units accuracy is about $\frac{1}{4}$ of 1% of full load. Sensitivity is high when used with appropriate servo balance system — giving a scale range of 3000 units to be calibrated as required.

Folders are issued on letterhead request to Automatic Temperature Control Co., Inc., Dept. CP, 5212 Pulaski Ave., Philadelphia 44, Pa.

Details instrument response, giving performance curves

Illustrated, 23-page technical bulletin gives circuits of manufacturer's null point instruments and contains ten plotted curves, including seven response curves. Information is specific and valuable in design and application of instruments, but is not intended to act as introductory or general descriptive matter.

Bulletin B15-12 is issued by Brown Instrument Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8263 on handy form, pages 2 and 3.

The Pump that wasn't a pump

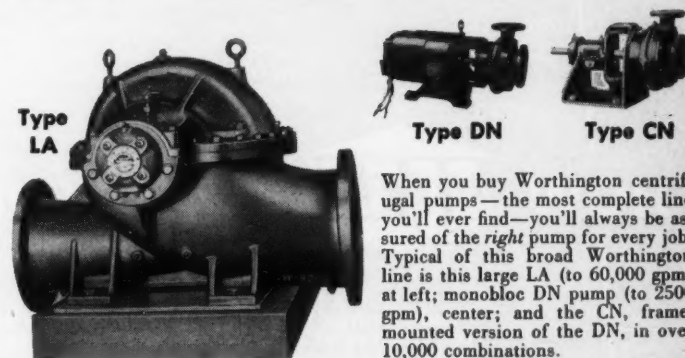
For many years this peculiar looking contrivance was the most efficient means known for moving water from one level to another—but it wasn't really a pump, it was a "shadoof".

Though still used today in many parts of the world, this hand-operated "bailing lever" is said to have been used 3000 years ago by the ancient Babylonians. On the basis of six strokes a minute, with a bucket that held 60 pounds of water, it could raise 36 gallons per minute. Those "bags" on the short end are used as counterpoises to lift the filled vessels.

If this were 3000 BC and you were looking for a pump for any purpose, the best Worthington could do for you would be to recommend a shadoof. The drive? Only one available—a husky slave.

Almost fantastic, isn't it, that crude devices like the shadoof, the mechanical innovations of their day, were the starting points for modern Worthington pumps—centrifugal pumps that can move as much as 250,000 gallons per minute; individual designs with 100,000 standard combinations of capacities, heads, casings, and mountings for any drive available; single-stage, multi-stage, volute, turbine, horizontal, vertical, Mixflo, Axiflo and regenerative pumps—for virtually every need of utilities, petroleum, paper, sugar, food, chemical, marine, water works, metal-working, and many other industries.

Yes, there's a Worthington pump for your requirement—a pump that's standard with Worthington. To find out about it, consult your nearest Worthington District Office or write to Worthington Pump and Machinery Corp., Centrifugal Pump Div., Harrison, N. J.

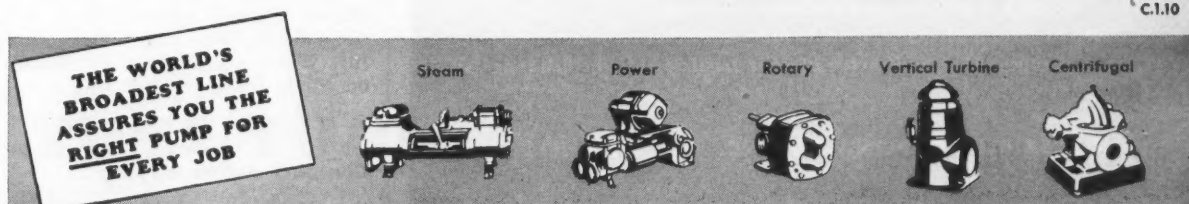


When you buy Worthington centrifugal pumps—the most complete line you'll ever find—you'll always be assured of the right pump for every job. Typical of this broad Worthington line is this large LA (to 60,000 gpm) at left; monobloc DN pump (to 2500 gpm), center; and the CN, frame-mounted version of the DN, in over 10,000 combinations.

WORTHINGTON

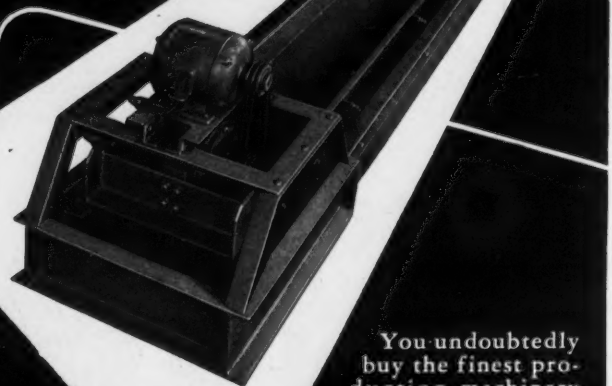


C.1.10



When inquiring check CP 8264 on handy form, pgs. 2-3

**Never underestimate
your cost of material
handling by
old fashioned
methods**



You undoubtedly buy the finest production machinery that is made. However, production and cost accounting authorities agree that the most important way to effect savings today is to effect economies in materials handling. Regardless of whether you measure in pounds, tons, dollars or all three, material handling cost is one of today's most serious problems of business in general and your business in particular.

HOW **AJAX** LO-VEYORS CUT COSTS

Exclusive Ajax Lo-Veyor design is responsible for low cost handling of bulk materials and equally important low maintenance cost,— and here's why:

1. Only three basic parts — pan or tube ... vibrating mechanism ... motor.
2. Completely self-contained — ready for use.
3. No exposed bearings, no eccentric shafts, no idler and tail pulleys.
4. Pan or tube made of ferrous or non-ferrous metal.
5. Covered pan or tubular Lo-Veyors provide gas-tight construction for critical processes and explosive operations.

Used by leading chemical, food, foundry and other manufacturers.

Write giving outline and sketch of your requirements for handling dry materials.

AJAX FLEXIBLE COUPLING CO. INC.

WESTFIELD, N. Y.

When inquiring check CP 8265 on handy form, pgs. 2-3

NEW LITERATURE

Reference guide to use of pesticide carrier

First of a series of information bulletins which will cover pesticide processing is this 11-page publication. It describes in general terms the use of manufacturer's product as a diluent and carrier in the formulation of DDT, BHC, toxaphene, dieldrin, chlordane and parathion dusts.

Physical and chemical properties of the material are given along with its compounding characteristics. A folder is included for filing of the entire series. "Attaclay" is issued by Attapulug Clay Co., Dept. CP, 210 W. Washington Square, Philadelphia 5, Pa. When inquiring specify CP 8266 on handy form, pages 2 and 3.

Reveals operation, uses of Monogas generator

Complete information about packaged Monogas generator is available in 8-page booklet. Applications of this combination Exogas generator and CO₂ removal system are described, and construction details and dimensions of the combined unit are provided.

Schematic diagrams show how the generator works, and eight typical installations for annealing, brazing, normalizing, drawing and gas carburizing are depicted photographically. Bul DB-28-825, issued by Industrial Heating Department, Westinghouse Electric Corporation, Dept. CP, Meadville, Pa. When inquiring check CP 8267 on handy form, pages 2 and 3.

Liquid filters are for sump, line

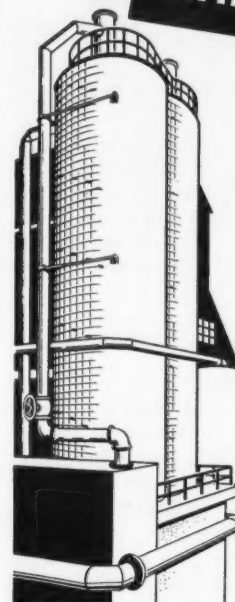
Complete engineering data on synclinal type filters for sump or line installation on hydraulic and low-pressure liquid recirculating systems are provided in 8-page folder. Capacities of single units range from 5 to 100 gpm; they are manifolded for systems with higher flows. Mesh sizes range from 30 to 200.

Photo of cut-away unit identifies parts. Disassembled parts are illustrated separately. Folder 105 is issued by Marvel Engineering Co., Dept. CP, 625 W. Jackson Blvd., Chicago 6, Ill. When inquiring specify CP 8268 on handy form, pages 2 and 3.

Compact dehumidifying

A unit only 18½ x 20½ x 11¾" for filtering and dehumidifying air fits under counters or tables. It is made by Frigidaire, Dayton, Ohio.

are your chemicals **MARIETTA-ized?**



Don't take chances with valuable bulk chemicals. Store them safely in Marietta tanks—protected from moisture and air—surrounded by structural strength that is wind and fire proof—designed to keep chemicals BONE DRY—lower your insurance rates.

Marietta tanks are constructed of light, strong Air-Cell concrete slabs—can be erected in line, in clusters, or combined with existing units to give year 'round fully protected storage for all your chemicals—reduce your handling costs. A Marietta can be erected in about two weeks.

For full details, write, wire our nearest office for literature and engineering advice.

**THE MARIETTA
CONCRETE CORPORATION**
MARIETTA, OHIO

Branch Offices: Race Road & Polaski Hwy., Baltimore, Md.
Box 1575, Charlotte, N. C.

When inquiring check CP 8269 on handy form, pgs. 2-3

"Weld-Bilt" EQUIPMENT GIVES YOU LONGER SERVICE IN LABOR- SAVING MATERIALS HANDLING

You can SEE the greater strength and durability in WELD-BILT Equipment ... in heavier arc-welded construction, in sturdier operating parts, in many innovations that assure easier, friction-free operation. Every piece of "Weld-Bilt" equipment is designed to save operator fatigue, protect product and save money both on original cost and maintenance expense.

You can easily PROVE "Weld-Bilt's" superiority through many more years of actual performance in hundreds of plants all over the Nation. It means your lowest possible investment-per-year in time and labor saving.

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PRODUCTS
WEST BEND EQUIPMENT CORP. WEST BEND, WIS.

Portable Electric Elevators

Pallet-Type Hydraulic Lift Trucks

Hydraulic Lift Trucks

Two-Wheel Hand Trucks

Skid Platforms

Platform Trucks

Write or wire for prices today or for engineering assistance on your handling problems or plans.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
319 Water Street, West Bend, Wisconsin

When inquiring check CP 8270 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Analyzes and records dust content to minimum of 0.0003 grain/cu ft

Operating on difference in emf generated by two photo-electric cells, the dust analyzer described in this four-page bulletin was developed originally to measure the amount of dust in blast furnace gas. Widespread application is suggested in the control of air pollution brought about by discharged gases from cement kilns, refineries, paper mills and similar installations. Dust content down to a minimum of 0.0003 grain per cubic foot can be analyzed and recorded.

Calibration information, diagram of instrument set-up, photos, and electrical circuit are given. Data Sheet 10.14-16 is issued by Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Station 40, Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8271 on handy form, pages 2 and 3.

Air is cooling medium in heat exchanger

Four-page bulletin shows how manufacturer's heat exchanger is used in cooling compressed air or gas, distillation reflux, oil quench bath, wire drawing solution, and in vacuum condensation of vapor from distillation process. Air, cooled by evaporation of a water spray, is the cooling medium in this type of unit. Five installation photos are included. Two diagrams and one sectional drawing explain operation.

Bul 120 is issued by Niagara Blower Company, Dept. CP, 405 Lexington Ave., New York 17, N. Y. When inquiring specify CP 8272 on handy form, pages 2 and 3.

Delves into collection, recovery of industrial dusts

Procedures and equipment for dust collection and recovery are treated in 28-page bulletin. First section discusses such things as why dust recovery is important, what dust is, dust analysis techniques, and factors which influence choice of equipment.

Second section is tab-indexed for handy reference to equipment. Included are van Tongeren cyclones, electric precipitators, fly ash collectors, low draft loss collectors, combination mechanical-electrical systems, special collectors, and hopper valves. Photos and drawings help reader to understand construction, operation and application.

Cat 101 is issued by Buell Engineering Company, Inc., Dept. CP, 70 Pine St., New York 5, N. Y. When inquiring specify CP 8273 on handy form, pages 2 and 3.

170-pg valve-comparison manual will be published in January

Multi-colored sheet describes revised and enlarged edition of 170-page loose-leaf "Equivalent Valves Manual," due off the presses January 20, 1952. Manual compares valves of 18 leading manufacturers by material, type, pressure rating, structural variations. Revised edition includes sizes for cast iron and bronze valves. Publisher claims manual reduces valve-spec checking to 1/10 time usually required.

Descriptive sheet is available now from Equivalent Valves Company, Dept. CP, P. O. Box 816, Station H, Los Angeles 44, Calif. When inquiring specify CP 8274 on handy form, pages 2 and 3.

DECEMBER, 1951



Remember—
the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.

It's a neat job...and it's stronger

- Welded piping systems are streamlined. They save space, are easier to insulate and are permanently leakproof.

For a complicated connection like this, use of the TUBE-TURN Welding Cross also means extra strength. This welding cross is made from the same seamless tubing and by the same process as TUBE-TURN Welding Tees. Bursting pressures obtained in tests of representative tees and crosses have averaged more than 25% higher than required by standard codes. This gives you extra quality at no extra cost.

Welding your piping with TUBE-TURN Welding Fittings means a neater design and stronger construction. Get in touch with your nearby TUBE TURNS' Distributor. There's one in every principal city.

Be sure you see the double "tt"

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DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO...A wholly owned subsidiary of TUBE TURNS, INC.

When inquiring check CP 8275 on handy form, pgs. 2-3



NEW LITERATURE

Describes steam generator units of 2000 to 7500 kw rating

Steam turbine generator units in NEMA ratings of 2000 to 7500 kw are described here. The manufacturer's WA-Series generators, according to this 8-page bulletin, are built in the condensing type for power generation only, and in the non-condensing and automatic extraction types to provide a steam-power balance where process steam is used.

Text material briefs the generators as being compact, three-bearing, solidly coupled units. Two of the three self-aligning bearings are in the turbine and one is in a bracket on the outboard end of the generator. All bearings are lubricated and cooled by oil supplied by a unit system through accessible piping located above the floor and within the unit. Bulletin 03B7645 is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 8276 on handy form, pages 2 and 3.

German periodicals printed on small microcards

A number of the basic German periodicals are available in microcard editions. Company is now prepared to reproduce research reports, engineering data, etc., on microcards. Sixty letter-size pages can be produced on one 3 x 5" card. One hundred such cards occupy only 1" of file space. Each of these pages can be quickly increased to its original size by means of a small, portable device, it is said.

Literature may be obtained from Technical Microcard Publishing Corp., Dept. CP, 112 Liberty St., New York 6, N. Y. When inquiring specify CP 8277 on handy form, pages 2 and 3.

Charts, photos and tables cover roller chains

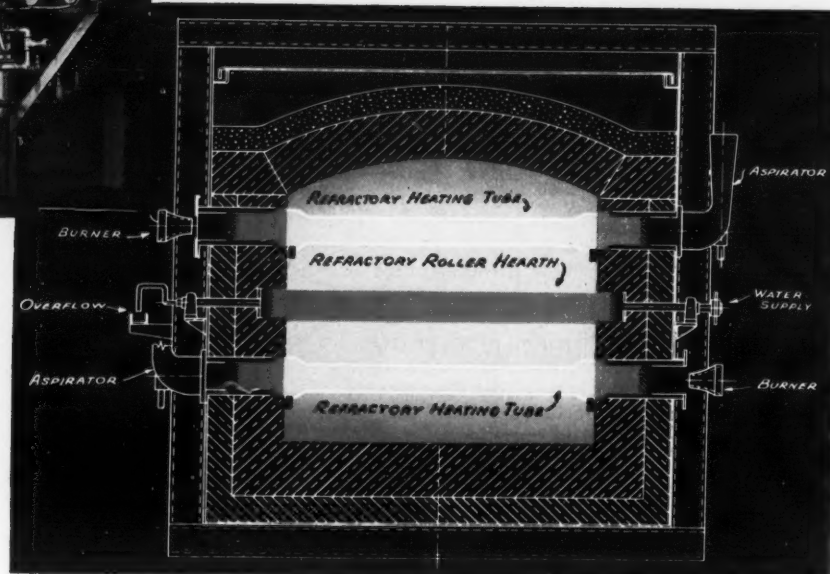
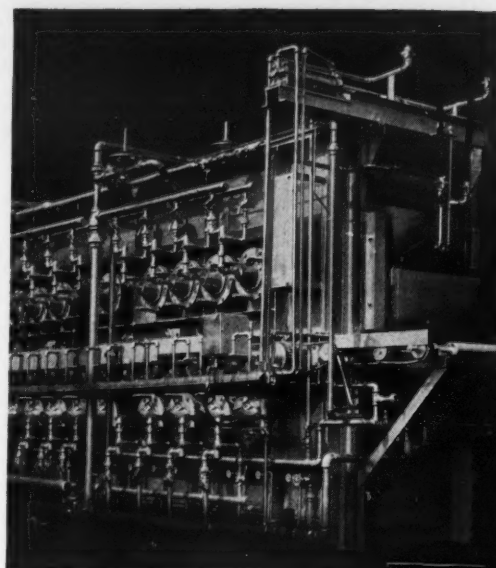
Main topic of this 12-page bulletin is manufacturer's roller chains which feature twice the pitch (distance between pin centers) of standard roller chains of the same width and strength. Stated advantages of this arrangement are the savings in cost and weight which can be effected in drives and conveyors.

Charts, photos, diagrams and tables show in detail this line of roller chains and the standard attachments available. There is also a description of double pitch chain sprockets. Bulletin 51-2 is issued by Chain Belt Co., Dept. CP-PR, Milwaukee 4, Wis. When inquiring specify CP 8278 on handy form, pages 2 and 3.

Combatting corrosion problems via use of red lead paints

Theme of this five-page reprint is the use of red lead as the corrosion inhibitive pigment in paints. Factors to be considered in formulation and proper use of red lead paints are given. For guidance of the maintenance engineer, a classification of red lead paints according to intended exposure conditions and a reference listing of current specifications useful as a procurement basis is included.

Conditions governing performance of paint coatings are listed as: nature of metal to be coated; surface preparation; intended environmental conditions; and paints,



By using Super Refractories instead of alloys for radiant tubes and rollers, The Gas Machinery Co. opens up new applications for this furnace.

The furnace at the left is a controlled-atmosphere roller hearth furnace. Work, such as castings to be malleablized, moves through on rollers—is indirectly heated by radiant tubes above and below the hearth.

In furnaces of this type, the rollers and tubes are customarily made of heat-resisting alloy steel. Consequently, maximum operating temperature is about 1600 F. (Above this temperature, the strength and hardness of these steels fall off sharply.)

So, The Gas Machinery Company tried something different. Instead of metal, they used CARBOFRAX silicon car-

bide rollers and radiant tubes—a Super Refractory material made by CARBORUNDUM.

With these changes, temperatures of up to 2500 F, and more, become not only possible, but practical—and a whole new field of furnace usages opens up. Moreover, both the rolls and tubes last longer. In fact, the rollers (which used to sag and wear away) show hardly any signs of wear at all.

This application points up several properties of this highly unusual material. At elevated temperatures it *conducts* heat almost as well as heat-resisting alloy steels. It can be used at far higher temperatures than metals will stand—up to 3000 F

Super Refractories by

CARBORUNDUM

Trade Mark

Refractories Division

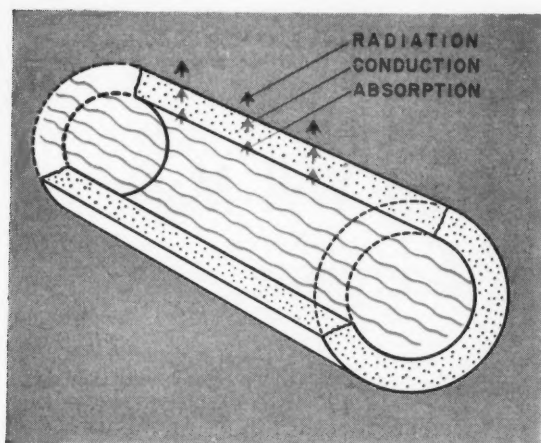
The Carborundum Company, Perth Amboy, N. J.

"Carborundum" and "Carbofrax" are registered trademarks which indicate manufacture by The Carborundum Company

pick up any ideas this use of tubes?

and higher. It doesn't scale, is very resistant to spalling and to heat shock. It is chemically inert—is little affected by the products of combustion—and is highly impervious to gases. It is also one of the most abrasion-resisting materials known. And it has the strength to support heavy charges, even at very high temperatures.

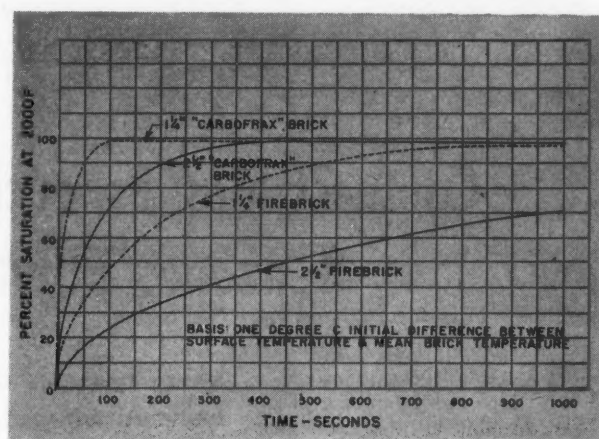
This illustrates the important thing about Super Refractories by CARBORUNDUM: They are not just "better" than standard fireclay refractories. They are actually a class apart—with distinctly different properties that have made possible distinctly new designs and processes. Once this



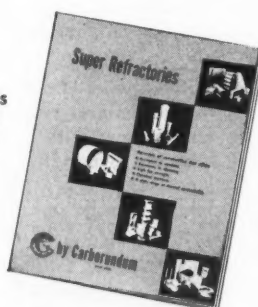
In indirect heating, absorption and emission factors come into play, as well as thermal conductivity. In both absorption and emission (and thus in radiating ability) CARBOFRAX tubes and shapes are superior to metal. They approach the high-temperature alloys in conductivity.

concept is realized, possible applications are almost unlimited. The Gas Machinery Co., for example, now uses Super Refractories in several kinds of equipment, including an ingenious continuous catalytic gas reforming unit. Other companies also have developed interesting new equipment—designed around Super Refractories.

WHAT ABOUT YOUR OWN PROCESSES? We have a new booklet which outlines the unusual characteristics of these special-purpose materials. The coupon will bring you the story—or one of our engineers would be happy to talk over your specific problems. We believe it could be mutually profitable.



Thermal conductivity also plays an important part in checkers. A regenerator using CARBOFRAX brick for its checkerwork can be operated on much faster cycles—absorbing and releasing many times more BTU's per second. Also, higher temperatures, to above 3000 F if desired, become possible.



Dept. S-121
Refractories Div., The Carborundum Co.
Perth Amboy, New Jersey
Please send your free booklet on properties of
Super Refractories.

Name _____
Position _____
Company _____
Street _____
City _____ Zone _____ State _____

When inquiring check CP 8279 on handy form, pgs. 2-3

NEW LITERATURE

primers and topcoats. Illustrations show results after exposure of several surface preparation methods and application schedules. "Preventing Corrosion with Protective Paint Coatings" is issued by Protective Coating Paints Dept., National Lead Co., Dept. CP, 105 York St., Brooklyn 1, N. Y. When inquiring specify CP 8280 on handy form, pages 2 and 3.

Reports on college's facilities for pollution research

Publication of eight pages describes the work and facilities of the Air and Water Pollution Research Section, Research Division, College of Engineering, New York University. It is well illustrated with photos showing wind tunnel tests, balloon high-altitude experiments, radioactive laboratory, air sampling, and health and safety techniques.

Text material is divided into sections and some of the subjects covered are: effects of pollution, industrial waste utilization, meteorology and aerodynamics, sanitary engineering and sanitary chemistry, industrial medicine and toxicology, and industrial hygiene laboratory. "Research in Air and Water Pollution" is issued by Bureau of Public Information, New York University, College of Engineering, Dept. CP, 181 St. and University Ave., New York 53, N. Y. When inquiring specify CP 8281 on handy form, pages 2 and 3.

Phosphatizing metals to effect corrosion-resistance

Topic of this 8-page bulletin is the preparation of metallic surfaces for coating application. Basic part of the process consists of treating the metals with a phosphate compound by either spray or immersion—an outline of both procedures being given. The effect is to impart an inert coating which provides an excellent base for organic coatings and also protects against atmospheric and chemical corrosion.

Iron, galvanized iron, steel, zinc and cadmium are metals on which the process has been used to advantage. Photographs show application as a pre-painting treatment for refrigerator parts, car bodies, artillery shells, U.S. Army gasoline cans and other parts. "Anchorite 100" is issued by Octagon Process, Inc., Dept. CP, 15 Bank St., Staten Island 1, N. Y. When inquiring specify CP 8282 on handy form, pages 2 and 3.

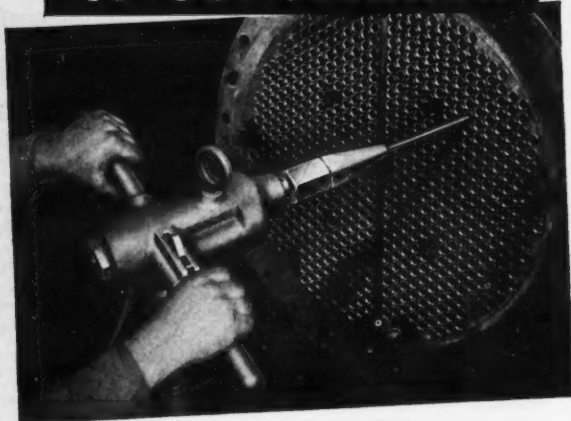
Combination gas and oil burners use economy fuels

Four-page, two-color bulletin features details of gas and combination oil and gas burners for commercial and industrial use. Advantages of manufacturer's five models are pointed out, and particular mention is made of such features as the forced air draft system and electronic controls. Both the gas and combination burner use any type of gas—natural, mixed or manufactured. The combination unit also burns the low cost #5 fuel—thus offering a choice of two very economical fuels.

Simple changeover, according to the bulletin, makes it possible to switch combination burners from gas to oil or vice versa in just a few minutes. The back cover includes a chart showing ratings and capacities of all five models. Bulletin AD-101 is issued by Hev-E-Oil Burner Division, Cleaver-Brooks Co., Dept. CP, 326 Keefe Ave., Milwaukee 12, Wis. When inquiring specify CP 8283 on handy form, pages 2 and 3.

CLEANS Fouled Heat Exchanger Tubes **QUICKLY...**

WILSON TP-301 CLEANER



This high speed tube cleaner is designed to increase output and minimize down-time. The improved Model TP-301 is the only tube cleaner which can remove deposits from completely plugged heat exchanger tubes . . . and other fouled straight tubes heretofore not considered practical to clean.

Many improvements, resulting from years of field experience, have been built into the new TP-301 cleaner.

- **MORE POWERFUL**—operating speed up to 3500 RPM at 90 psi utilizing 130 cfm.
- **LIGHTER WEIGHT**—only 15 lb.
- **SHORTER**—only 13" overall.
- **INCREASED CAPACITY**—from $\frac{3}{8}$ " up to $2\frac{1}{2}$ " or even 3" O.D. tubes up to 40 ft. in length.
- **LOW AIR PRESSURE**—operates on air pressure as low as 50 lb.
- **LOW HEAD ROOM NEEDED**—minimum practical working head room 5 ft.
- **COSTS LESS** than previous models.

VARIOUS CARBIDE BITS AVAILABLE



Send for Bulletin giving complete details on this man-hour and money-saving tube cleaner

WILSONIZE TO ECONOMIZE

THOMAS C. WILSON, INC. 21-11 44th AVENUE, LONG ISLAND CITY, N.Y.
CABLE "TUBECLEAN" NEW YORK

WILSON

TUBE CLEANERS · TUBE EXPANDERS

When inquiring check CP 8284 on handy form, pgs. 2-3



View of entire Koppers-Hasche unit erected at East Plant of Rochester Gas & Electric Corporation. At left is pressure regulating and flow metering equipment. In center is furnace, while at right is cooling tower. Installation produces more than 1,000,000 cu ft of gas per day

Compact Gas Producing Plant Will Make Benzene, Ethylene, Acetylene

USES: Present installations are producing city gas for public utilities, but with minor changes in raw materials or production procedures, the plant can synthetically produce benzene, ethylene, acetylene.

Features: Unit now in operation as a demonstration in Rochester, N. Y., exhibits great versatility. It can make city gas ranging in heat content from 300 to 1050 Btu, and can use gasoline, propane, butane, light oil, or natural gas as raw materials. The plant can either reform natural gas to provide larger quantities of lower Btu city gas or, where natural gas is used, it will make a gas comparable to natural gas in Btu-content which can be used in peak periods or during a line break that cuts off supply of natural gas.

Process forms no undesirable residues such as lampblack in the equipment. Oxygen in the heating gas from the furnace can be held as low as 0.2%. Unit will operate at near-capacity in one hour, after cold start. Changeovers from one type of fuel to another can be made in only the time it takes to regulate valves and adjust heat conditions, according to reports.

It is said to be practical to build units up to 12,000,000

Many types of charge stocks can be used without difficult change-over; plants of 12,000,000 cfd are practical

cu ft of gas production daily. Unit at Rochester is producing slightly over 1,000,000 cu ft of 300 Btu gas which, when enriched cold with straight natural gas, becomes 1,400,000 cu ft of 537 Btu city gas. Peak input to the unit is about 300,000 cu ft of natural gas per day. This unit occupies space of only 42 x 21' and, except for cooling tower, is less than 10' high. It could have been condensed into an even smaller space if necessary.

Description: In the Hasche process, around which the Koppers-Hasche installation is built, the various chemicals are produced chiefly by varying operating temperature. Reforming is done thermally or catalytically, depending on the type of gas to be produced. Heart of the process is the thermal reforming furnace which may be operated at temperatures up to and even above 2200°F. When producing city gas, it is operated at 1500-1600°F.

Inside the furnace is a core of checker tile 9" wide and 20" high, divided in the center by a reaction chamber in which catalyst may or may not be used. Surrounding this core is $4\frac{1}{2}$ " of refractory brick, a like thickness of

insulating brick, and a 1/2" thick steel shell. Gas and air mixture flows for one minute into one end of the 20' long furnace, then for one minute into the other end. The automatic and periodic reversing of flow into the furnace keeps temperature gradients within the furnace more constant, thereby assuring uniform gas quality. Since the furnace is hottest at its center, gas heated at the center would carry heat to one end of the furnace, while the other end would tend to become much cooler because of influx of unheated gas.

Outlet pipes lead the reformed gas to a cooling tower, and ultimately the gas goes to storage holders. Pressure generated in the process eliminates the need for exhausters. Careful control of process is assured at all times from a control panel which records temperatures, rates of flow, pressures, and which analyzes the gas mixture. Once in operation, the unit needs only periodic checking by one operator.

Furnace is started with special gas burners under the checker tile. When input of gas is started after the central region of furnace is heated to about 2000°F, the reaction becomes self-supporting, and starter burners are turned off.

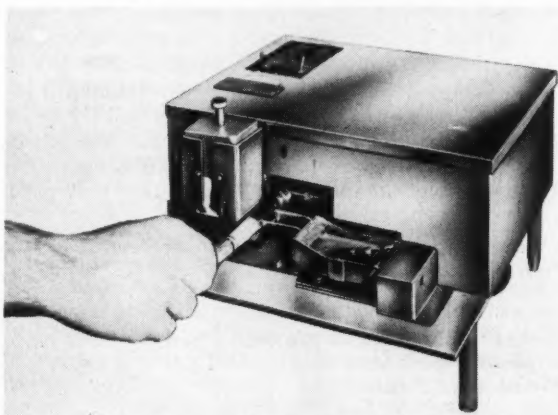
(Constructed by Koppers Company, Inc., Dept. CP, Pittsburgh 19, Pa. . . . or for more information check CP 8285 on handy form, pages 2 and 3.)

Labels collapsible tubes at rate of 32/min . . .

adhesive left in glue pot over night, touching switch in morning readies for operation in 10 min

Uses: Applies 32 slip labels per minute to 1/8, 1/4, 1/2, and 1-ounce collapsible tubes.

Features: Adhesive employed is a hot-melt resin kept at correct temperature by a thermostatically controlled glue pot. Glue tank does not have to be emptied at end of



Labeler for collapsible tubes

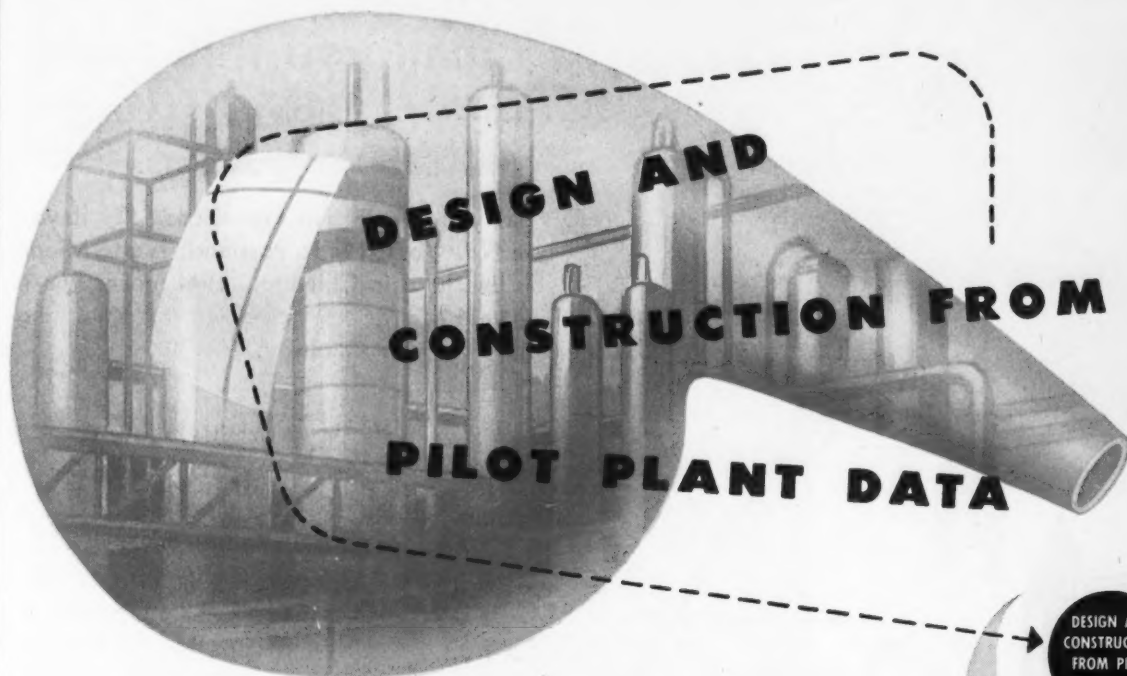
day — switch is turned on in morning and unit is ready for operation in 10 minutes.

Description: Labeler automatically forms and ejects the label directly on the collapsible tube. Application is snug, but allows for removal when necessary.

Machine is completely self-contained except for vacuum pump line for label pick-up. Hopper holds 500 labels. Overall dimensions are 17 1/2 x 15 x 9 1/2". Stainless steel cover keeps unit clean and removes easily to give access to working mechanism.

(Development of the Potdevin Machine Co., Dept. CP, 1285 38th St., Brooklyn, N.Y. . . . or for more information check CP 8286 on handy form, pages 2 and 3.)

TYPICAL WIGTON-ABBOTT SERVICE IN THE PROCESS ENGINEERING FIELD



From information gained during experimental work with the pilot plant, Wigton-Abbott engineers analyze the data, suggest any additional tests that may be necessary, develop the process and prepare engineering flow sheets. This is one phase of the 5-point service to the chemical industry offered by the Wigton-Abbott Corporation. It is the key to an integrated plan for the design and construction of a complete plant—a service available separately or as part of an overall project. Let us discuss your plant construction problem with you and show you how Wigton-Abbott can help you every step of the way.



● *Yours for the asking*
"Packaged Plant Construction".
Reading time, only 10 minutes—
but it will save you many hours
by answering basic questions.

5
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ABBOTT
SERVICES
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DESIGN AND
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PROCESS
DESIGN FROM
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ECONOMIC
SURVEYS AND
ANALYSES

THE
DEVELOPMENT
OF A NEW
PROCESS

CONVERSION
OF EXISTING
FACILITIES

Wigton-Abbott Corporation

DESIGNERS...ENGINEERS...CONTRACTORS...PLAINFIELD, NEW JERSEY

When inquiring check CP 8287 on handy form, pgs. 2-3



Can you guess *How Much* it cost to mail you this copy of **CHEMICAL PROCESSING**?

15c . . . if you live in San Francisco. 12c if your home is in New York; 14c to Portland; 13c to Miami; 8c if you live here in Chicago. That means 96c to \$1.80 per year . . . for postage alone. Yet this magazine comes to you without charge.



Why do we do it?

Why don't we demand that you buy a subscription? Well, strange as it may seem, it usually costs more to sell a subscription than the publisher gets out of it . . . and a good many important men simply can't be reached when selling subscriptions.

Then where DO publishers' dollars come from?

Contrary to what many folks think, subscription revenue is hardly a "drop in the bucket" of a publisher's income. Most all of it must come from the advertising sold.

So the publisher must get maximum readership from the maximum number of readers in the field . . . from men like yourself . . . so his advertising pages will be of greatest value.

CHEMICAL PROCESSING
Published by **PUTMAN PUBLISHING COMPANY**
111 East Delaware Place Chicago 11, Ill.

Creators of **PUTMAN-STYLE** Magazines
. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more **READER ACTION**



Advertisers demand best coverage

Since the advertisers pay the bills, the publisher can succeed only as he publishes the most readable magazine and then gets the best possible coverage of the best readers in the field.

And, as you can see, the most effective method of getting such coverage is (a) to hand-pick the most important men and (b) send the magazine to ALL of these men.

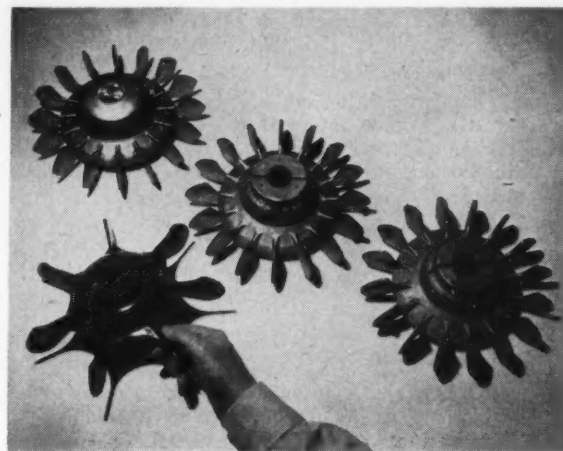
That's why you get **CHEMICAL PROCESSING** . . . without charge. You are important in chemical processing, hence you are important to our advertisers, hence you are important to us as publishers. That's why we spend many thousands of dollars on every issue of **CHEMICAL PROCESSING**, to make it of top interest to you in your work — to make every issue more than worth your reading time. That's why **CHEMICAL PROCESSING** comes to you without charge.

PROCESSING EQUIPMENT

Plastic blowers for motors conserve critical bronze and aluminum . . .

offer advantages of chemical resistance and lighter weight, without sacrificing performance

Blowers in small, totally enclosed, fan cooled AC motors are now being made of plastic as a replacement for critical aluminum and bronze. Such construction has many advantages including high resistance to chemical attack and one-third reduction in weight (important where frequent, rapid reversals are required). Pre-



Types of plastic blowers used in fancooled motors

liminary tests indicate better resistance to abrasion. The plastic blower has successfully passed overspeed tests at four times normal speed.

Plastic is a polyester resin reinforced with glass fibers. This type of reinforcement has been found to be superior to organic fiber reinforcement because of increased resistance to chemical attack and increased strength per pound.

Westinghouse currently is applying these new plastic blowers to totally enclosed, fan cooled Life-Line motors in NEMA frames 254 and 284 (5 and 7½ hp, 1750 rpm). They will be applied to other motors later.

(Westinghouse Electric Corporation, Dept. CP, 306 Fourth Ave., Pittsburgh 30, Pa.)

Depositing metals on plastics improves their heat and chemical resistance . . .

applications have included the coating of electronic equipment, turret swivel joints, cloth, etc.

A plant has been involved for some time in the metalizing and electroplating of plastics with a variety of metals such as chrome, copper, nickel, cadmium, silver, gold, etc. The plating process used consists of four basic steps: (1) surface treatment to insure wetting and adhesion of the bond coat (conductive film), (2) application of the bond coat, (3) plating, and (4) finishing. For purposes of economy, a base coat of copper is first deposited. Then, the part can either be finished with this copper plating or be further treated with a thin coat of gold, silver, etc. depending on requirements.

Among the advantages resulting from the product obtained are: the elimination of corrosion due to electrolytic action as encountered with metal to metal bonds;

NBP

MEMBER OF NATIONAL BUSINESS PUBLICATIONS, INC. & CONTROLLED CIRCULATION AUDIT, INC.

CCA

PROCESSING EQUIPMENT

and, an improvement in strength, heat and chemical resistance, and dimensional stability.

Metal-plated plastic parts have found application in the electronic, aviation and automotive fields. In addition the process has found use in preparing items of defense, as exemplified by the copper plating of aircraft antennae masts of compressed impregnated wood, cadmium plating machine gun turret swivel joints of phenolic plastic and silver plating polystyrene plastic loop antennae. Cloth has been metallized to improve conductivity and heat transfer properties. An extensive application has been a decorative one—the bulk plating in barrels of small plastic parts, such as buttons, beads, charms, radio knobs, bottle caps and similar items.

(Manufacturer performing this process is Plastiplate Co., Inc., Dept. CP, South River, N. J. . . . or for more information check CP 8288 on handy form, pages 2 and 3.)

Condensate pump needs no base — mounts on legs of tank . . .

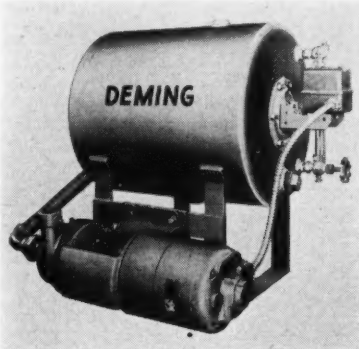
units built in simplex and duplex types to handle from 2000 to 40,000 sq ft of radiation

Uses: Return condensate from steam coils, radiators, or steam operated equipment back to boiler.

Features: Centrifugal pumps used on these units have enclosed type bronze impeller and stainless steel shaft.

Description:

Complete line of units includes single and duplex models. The latter are designed for conditions involving occasional demands in excess of the capacity of the single type, or where a stand-by pump is desired to assure continuous operation under all conditions.



Centrifugal pump mounts on frame of condensate return tank

Single units include pump, motor, storage tank, suction piping, float switch and water level gauge. Duplex units, of course, have two pumps and two motors. Pumps have deep stuffing box with conventional rings for grease lubrication. Pump is mounted on the legs of the tank so no base is required. Motor has standard NEMA type "C" mounting flange and is furnished for single phase, two or three phase, or direct current, as specified. Selection of 44 units in both single and duplex types is designed to handle from 2000 to 40000 sq ft radiation.

(Motor-Mount condensation return units are made by The Deming Company, Dept. CP, Salem, Ohio . . . or for more information check CP 8289 on handy form, pages 2 and 3.)

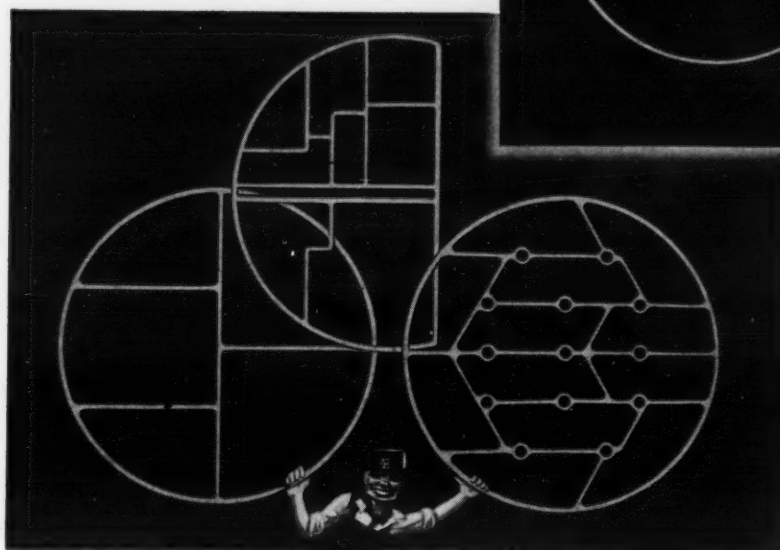
Airtight container, special dessicant protect futuristic car in shipment

To ship its futuristic experimental car, Le Sabre, overseas last September, General Motors built an aluminum covered plywood container, designed to be virtually airtight. To reduce humidity and protect metal parts, 60 lb of Protek-Sorb dessicant (a silica gel) was supplied by Davison Chemical Corp.

DECEMBER, 1951

Precision-made to the design you need . . .

Simple...



Complex...

Goetze Heat Exchanger Gaskets stay on the job longer!

Whether your specifications call for a simple or complex design, you can depend on Johns-Manville Goetze heat exchanger gaskets to do the kind of sealing job that costs you less in the long run!

That's because they are carefully hand-tailored to assure the accuracy of fit so important in heat exchanger service. Every detail of construction reflects the craftsmanship that goes into the fabrication of these better gaskets.

You'll find no wrinkles or cracks on the corners. Lap widths are ample, rib widths uniform.

More than 60 years of gasket-making experience is your further assurance that when you put a Goetze heat exchanger gasket on the job, you can count on it to stay on the job for a long time. For further details and a prompt estimate of cost, send us a blueprint or template. Just address Johns-Manville, Box 290, New York 16, New York.



Johns-Manville Goetze GASKETS

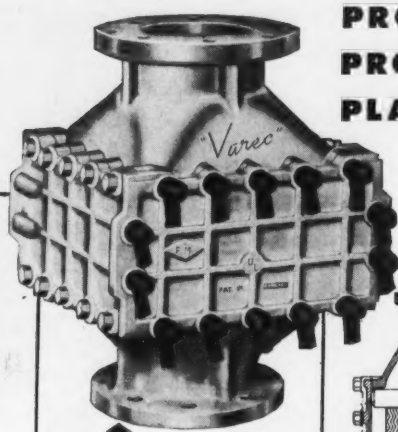
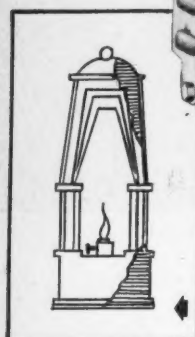
THERE'S A JOHNS-MANVILLE PACKING AND GASKET FOR EVERY SERVICE

When inquiring check CP 8290 on handy form, pgs. 2-3

THIS MODERN

"Davy's Lamp"

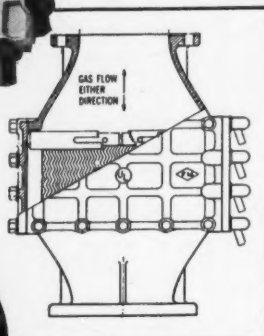
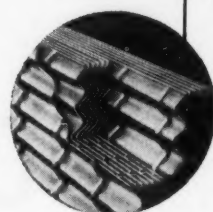
**PROTECTS
PROCESSING
PLANTS**



1951

1815

In 1815 Sir Humphrey Davy first applied the principle of separating flammable gases from open flame by means of a copper screen. The result was the "Davy's Lamp" which gave underground coal miners a chance for survival.



"VAREC" Fig. No. 50
Flame Arrester
Listed by
Underwriters' Laboratories
Approved by Associated
Factory Mutuals Laboratories
and other governing agencies

"VAREC" FLAME ARRESTERS utilize this age-old basic principle of heat transfer in protecting plants, equipment and lives against fire and explosion wherever gas or flammable liquids are stored.

They stop burning gas in piping from rapidly propagating thus preventing fire and explosion. Heat of the flame is dissipated through the many surfaces of the multiple corrugated aluminum plates within the unit. Resultant heat loss, plus the tortuous passageways through which the flame would have to pass, stops flame propagation just as the copper screen did in the "Davy's Lamp."

"Varec" Flame Arresters are a low cost investment in the utmost safety for your plans . . . consult your "Varec" representative or write direct.

NF 2

**THE VAPOR RECOVERY
SYSTEMS COMPANY**
COMPTON, CALIFORNIA, U. S. A.
Cable Address: VAREC COMPTON USA (All Codes)



When inquiring check CP 8291 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Bulk cargos loaded quickly
into ship's hold in steady
stream from trimmer . . .**

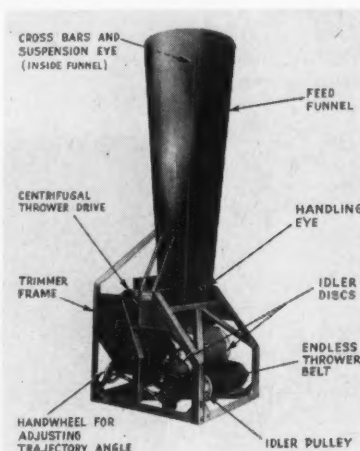
thrower belt swivels to direct material into most remote corners for even distribution of cargo

Uses: Loads and trims bulk cargos of chemicals, bauxite, grain and similar materials into ships at rates up to 1500 tons per hour.

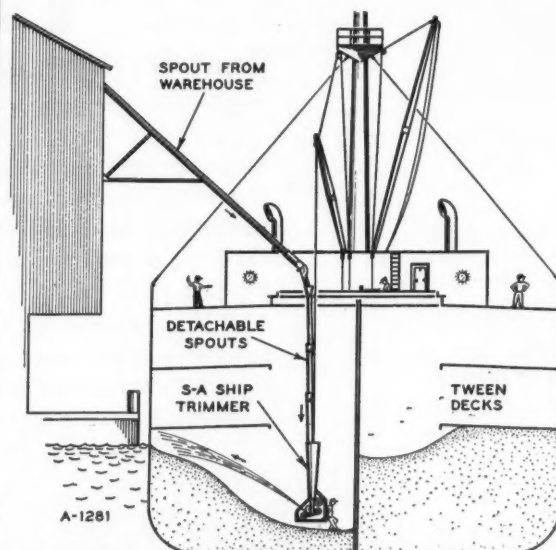
Features: Loading time reduced as much as one-half and with only one-fifth the usual manual attention. Working conditions are improved, disagreeable task of hand trimming eliminated and dust minimized. Material is thrown uniformly over hold, even into remote corners.

Description:

Trimmer is available in two types: fixed type for permanent mounting on a vertical chute at dockside, or in the deck type, which can be cable suspended from ship's rigging. The fixed type has a mechanism which swivels the thrower belt in a horizontal arc from a control panel outside the hold. The deck type suspended by cable, must be steadied by two men in the hold and can easily be spun through a 360° arc. A hand operated gear mechanism controls the vertical angle of throw. Photo diagram shows No. 2 trimmer. This is a self-contained unit which is lowered into the ship's fall.



Rigging suspended trimmer



Cross-section of ship being loaded by trimmer

Material to be loaded is directed into the large feed hopper or into extension chutes. Material falls through chutes and onto an endless short rubber belt operating at high speeds. Material is thrown out in a stream, trajectory

Niacet
TRADE-MARK

**SODIUM
ACETATE**

ANHYDROUS

**is made especially
for . . .**

BUFFERING

Against strong acids, as in corn syrup refining.

RUBBER PROCESSING

As an acid absorbent in the manufacture of neoprene crepe. For activating rubber accelerators.

ELECTROPLATING

For improving the anode efficiency at low temperatures.

PHOTOGRAPHY

For dry fixers and hardening powders.

DYESTUFFS

For the preparation of diazo compounds in developing azo colors.

SYNTHESIS

Of coumarin, cinnamic acid, azo chloramide, benzyl acetate, and many others.

TANNING

For the removal of insoluble calcium salts during tanning to produce a tear-resistant, flexible leather. For neutralizing pickled skins in chrome tanning to give amazingly short tanning periods.

For further information
write to:

**Carbide and Carbon
Chemicals Company**

A Division of
Union Carbide and Carbon Corporation



30 East 42nd Street, New York 17, N. Y.

When inquiring check CP 8291A
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

angle of which is controlled by handwheel. As hold becomes full trimmer is raised.

Styles and sizes of ship loading trimmers are available to meet specific requirements.

(Trimmers are built by Stephens-Adamson Mfg. Co., Dept. CP, Aurora, Ill. ... or for more information check CP 8292 on handy form, pages 2 and 3.)

ALCOA plant adds to safety by servicing lighting fixtures at floor level ...

lowered fixture is dead so electrician can't get a shock as he works

The Cleveland Works of the Aluminum Company of America has reduced lighting maintenance costs and provided maximum safety for service crews by installing disconnecting and lowering hangers. With these hangers, overhead lighting fixtures may be serviced at floor level, thus obviating the need for ladders and

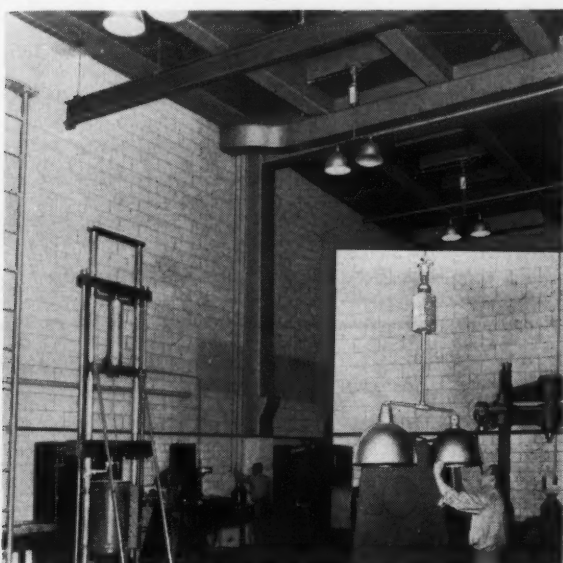


Photo shows electrician preparing to lower a fixture in mechanical testing department to replace a burnt-out mercury vapor tube; inset shows tube replacement at floor level. In this particular installation, the combination fixtures employ 400-watt mercury tubes and 750 or 1000-watt incandescent bulbs. Room's ceiling is 30' high, and luminaires are 24' above floor level

scaffolds. Extra safety is provided because the live contacts of the hangers remain overhead on the supporting structure; the lowered fixtures are dead.

Series 3000 (3-way, 4-wire) indoor type hangers are used with combination mercury-incandescent luminaires in the research foundry, the mechanical testing department of the research foundry, and in one of the production foundries. A new installation will be completed shortly in another part of the operating department. Hangers are used where lights are at least 16' above floor level and not readily accessible.

Manufacturer of these hangers also makes complete line of corrosion and weather resistant hangers for outdoor application.

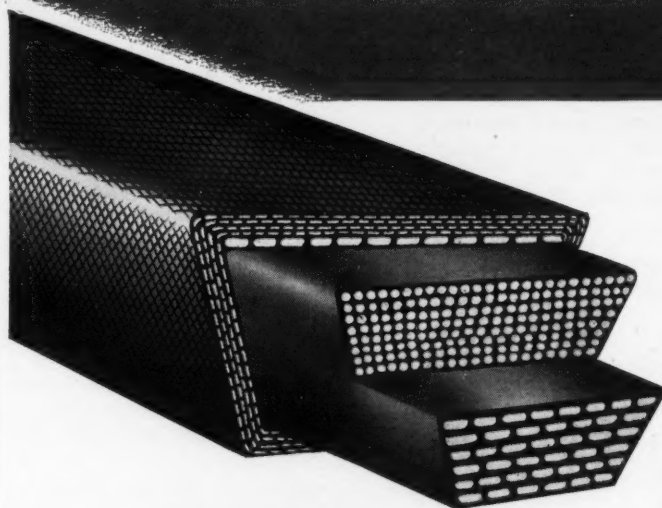
(Hangers are made by Thompson Electric Company, Dept. CP, 1111-88 Power Ave., Cleveland 14, Ohio ... or for more information check CP 8293 on handy form, pages 2 and 3.)

DECEMBER, 1951

"TOUGH PROBLEMS INVITED — Ask us or your nearest BWH distributor about your power transmission belting, conveyor belting and hose problems. We're specialists in making mechanical rubber products work better, longer."

This ¶ in our V-Belt ads is no Afterthought

It Can Help You to Lower Costs and Increase Efficiency



And Don't Forget These 4 Basic Advantages of BULL DOG V-Belts

- 1. Durable Covers** — closely woven, heavy, bias-cut fabric withstands the severe wearing action where belt meets sheave. *You get longer wear plus sealing of the belt against entrance of dirt, moisture, grease.*
- 2. Minimum Stretch** — due to an exclusive technique in processing Bull Dog Cords. *You get less slippage, fewer adjustments, extra belt life.*
- 3. Specially Engineered BWH Cord Section** has high tensile strength. *You get superior load carrying capacity and stamina to absorb shock loads.*
- 4. Takes Punishing Flexing** — BWH research has paid off in quality-controlled compounds. *You get compounds which run cooler and don't crack or deteriorate under severe flexing.*

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: Cambridge, Mass. • P. O. Box 1071, Boston 3, Mass., U. S. A.



When inquiring check CP 8294 on handy form, pgs. 2-3

One Compact Unit



Syntron F-44 Tubular Feeder regulating feed to a ball mill in a cement plant. Not only reduced maintenance cost by eliminating items noted, but greatly increased overall efficiency of the operation.

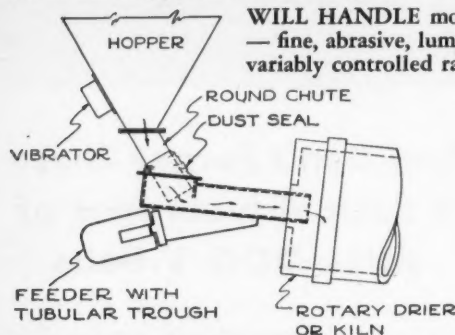
Replaces

- Screw Conveyor
- Sprocket and Chain Drive
- Countershaft
- Belt Drive
- Motor

SYNTRON

Vibra-Flow

VIBRATORY FEEDERS



WILL HANDLE most all types of bulk materials — fine, abrasive, lumpy, hot, cold, dry, damp. AT variably controlled rates from pounds to hundreds of tons per hour. TO mixers, belt conveyors, ovens, driers, crushers, screens, driers, blenders, packaging machines, etc.

Due to absence of motors, pulleys, gears, cams, eccentrics and other wearing parts, Syntron Feeders operate with an exceptionally low maintenance cost.

Available in a wide range of sizes and styles: flat pan trough, tubular trough, half round trough, V-shaped trough, spreader feeders, drier feeders, oven feeders, picking tables, elevator feeders, screening feeders, grizzly feeders, and a host of other special types.

Our Engineering Dept. will gladly submit recommendations for the solution to your feeding problems. Please include all pertinent data, such as material to be fed, percentage of moisture, approx. tonnage requirements per hour, etc. Also, new Catalogs are now available and will be promptly sent upon request.

Other Syntron Products

ELECTRIC VIBRATORS

WEIGH FEEDERS

DRY FEEDER MACHINES

SHAFT SEALS

VIBRATING GRIZZLIES

BATCH WEIGH PLANTS

TEST SIEVE SHAKERS

VIBRATING SCREENS

and

A COMPLETE LINE OF PORTABLE POWER TOOLS

"From Diesel Pile Hammers to Electric Saws"

SYNTRON COMPANY

110 Lexington Avenue

Homer City, Penna.

When inquiring check CP 8295 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Floor patch and resurfacer wears 4 times better than concrete, states report . . .

has 3 times compressive strength of concrete

Uses: Patching and resurfacing material for indoor and outdoor concrete floors. Especially recommended as covering for new concrete floors.

Features: Reported to possess 3 times the compressive strength of concrete, to wear 4 times better, and to withstand loads up to 12,000 psi.

Description: Flinhard powder (a quartz aggregate) merely requires the addition of water and is then ready to apply by troweling. Four-hundred pounds of powder will make a mix that covers approximately 100 sq ft, 1/2" deep. Takes traffic in 24 hrs.

Adherence to old and new surfaces is high. Coefficient of expansion enables it to withstand temperature extremes without cracking or buckling. It resists destructive action of acids, alkalis, greases, and oils. Said to absorb 25% less water than ordinary concrete.

(Flinhard is a product of Paramount Industrial Products Co., University Center Station, Cleveland 6, Ohio . . . or for more information check CP 8296 on handy form, pages 2 and 3.)

Reminds employee of his responsibility for safety . . .

safety sign shows days worked without lost-time injury

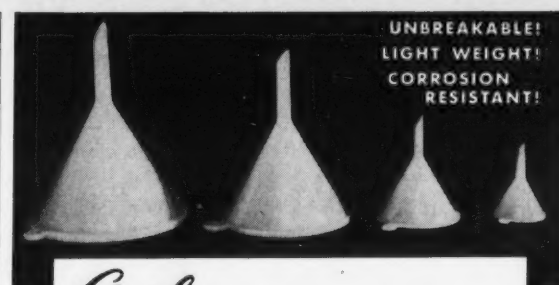
Uses: Sign is constant reminder of days worked without a lost-time accident.

Features: Value is psychological. Sign conveys the thought that responsibility rests with each and every employee.

Description: Safety Scoreboard is 20" wide and 30" high, large enough so lettering can be read at a distance. It is made of 20-gauge metal, finished in baked Dulux (green background and white letters).

Sign includes two blackboard-finish panels enclosing the word "Days" with space to write in numerals. Top panel is for chalk notation as to how many days department has worked without lost-time accident; bottom panel is for notation of best previous record.

(The No. 505 Safety Scoreboard is a product of Industrial Products Company, Dept. CP, 2834 N. Fourth St., Philadelphia 33, Pa. . . or for more information check CP 8297 on handy form, pages 2 and 3.)



Agilene (POLYETHYLENE) FUNNELS

AGILE'S LATEST ADDITION to its line of Agilene (Polyethylene) Products is designed for use in all industrial and laboratory applications where corrosive liquids, particularly hydrofluoric acid, are handled.

Agilene Funnels are available in sizes from 1" to 12" diameter, are precision made and their light weight and durable qualities are features you cannot afford to overlook.

Write today for complete information on Agilene Funnels and our entire line of Agilene Products.



WRITE FOR FULL INFORMATION

AMERICAN AGILE CORPORATION

PLANT and GENERAL OFFICE

5461 Dunham Rd., Maple Heights, Ohio

Mailing Address, P. O. Box 168 • Bedford, Ohio

When inquiring check CP 8298 on handy form, pgs. 2-3

ALCONOX SAVES YOU DOLLARS!

3 1/2 cents makes a whole gallon of the finest active cleanser obtainable.

You also save time and labor with ALCONOX. For with it, you simply wash and rinse. There are no remaining streaks or film.

ALCONOX is SAFE!

For — Glassware, Metal, Porcelain, and Plastic equipment



Available in

Box of 3 lb.	Price \$ 1.95
Carton (12 x 3 lb)	ea. 18.00
Bag of 50 lb.	lb. .40
Barrel of 300 lb.	lb. .37
(slightly higher on Pacific Coast)	

ALCONOX INC.

61-63 Cornelison Ave.
Jersey City 4, New Jersey

When inquiring check CP 8299 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Announce breaker panelboards for distributor stocking or "off-shelf" delivery . . .

"plug-in" panelettes use standard 120 and 240 v AC breakers, 15 to 100 ampere, 1, 2 and 3 pole

Uses: Complete desired circuit arrangements are made by plugging breakers onto silvered bus bars.

Features: Thermal-magnetic, two-way protection is provided by circuit breakers used in these panelettes. Thermal trip element holds harmless momentary overloads but trips if overload continues. Magnetic trip element functions instantly on both moderate and heavy "shorts".

Description: Plug-in distribution panelette is for standard 120 and 240 v AC circuit breakers from 15 amperes to 100 amperes, 1, 2 and 3 pole. Four standard basic devices are available, permitting stock selections of equipment to meet most job requirements, including space for future requirements, when desired.

An assortment of knockouts is provided in the Code gauge galvanized steel boxes. Ample wiring space is also afforded. The single-row, 200-ampere-mains panelette has 4" wiring gutters on all sides. The double-row, 400-ampere-mains panelette has 4" side gutters and 6" end gutters. Panelettes bear Underwriters' Laboratories approval and labels.

(MHP "plug-in" distribution panelettes are built by Square D Co., Dept. CP, 6060 Rivard

St., Detroit 11, Mich. . . or for more information check CP 8300 on handy form, pages 2 and 3.)

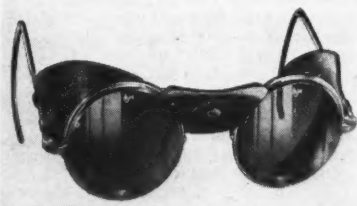
Latest welding goggle has removable, adjustable leather side shields . . .

adjusts for maximum comfort as well as perfect fit

Uses: Goggle protects operators against heat, harmful light, and flying particles during welding operations.

Features: Goggle has removable and adjustable leather side shields.

Description: Series 3081A goggle replaces maker's previously announced 3081 goggle. The new goggle can be adjusted for perfect fit and maximum comfort by loosening the end-piece screws. Removal of these screws allows side shields to be taken off for cleaning, sterilizing, or replacing.



Welder's goggle

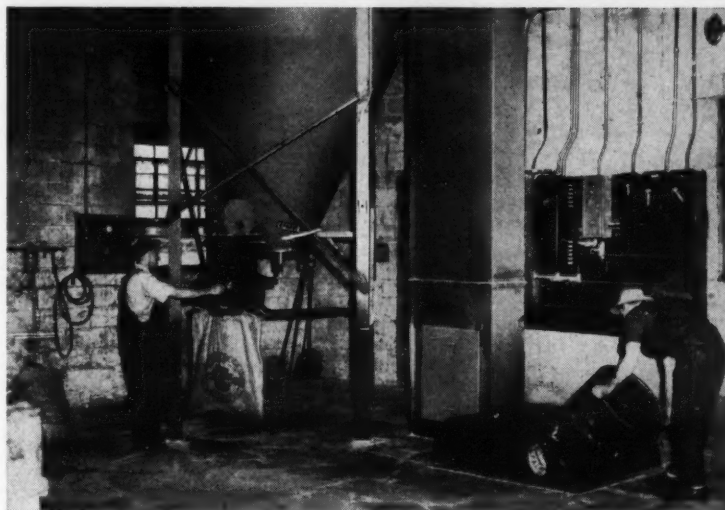
Side shields of the goggle are soft leather. Cylinder bridge and reinforcing bar are also covered with leather. (Development of the American Optical Company, Dept. CP, Southbridge, Mass. . . or for more information check CP 8301 on handy form, pages 2 and 3.)

pointers

to

BETTER PROCESSING

EQUIPMENT INFORMATION FOR PROCESSING PLANTS



GLUE MANUFACTURER Gets Product Uniformity ...Saves Man Hours and Floor Space—with Sprout-Waldron Vertical Batch Blender

PROBLEM:

A prominent hide glue manufacturer found it necessary to reduce mixing and packing costs. Since Sprout-Waldron was experienced in this phase of glue processing...had previously furnished equipment for similar operations—it was a natural assignment for S-W Engineers.

The source of the trouble was soon traced to mixing operations...just before packaging. Here, obsolete methods and equipment were running production costs way out of line. Excessive man hours and valuable floor space were considered necessary evils. Almost three hours were consumed in mixing a 10,000 lb. batch. And, an operator had to "stand by" under dusty conditions during the process.

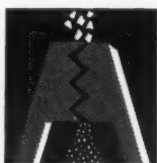
SOLUTION:

A 300 cu. ft. S-W vertical, self-cleaning batch blender equipped with weighing unit now does the job, in conjunction with one bucket elevator. This combination *saves space, is dust-tight, and fast.*

RESULTS:

1. Perfect batch uniformity
2. Mixing time reduced from 3 hours to 15 minutes
3. 125 sq. ft. of floor space saved
4. Mixing and packing costs cut in half

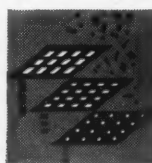
If you have a *mixing or blending problem*, why not take it up with Sprout, Waldron & Co., Inc., 10 Waldron St., Muncy, Pa.



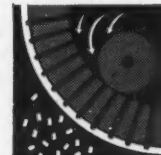
Size Reduction



Bulk Materials Handling



Product Classification



Pelleting & Cubing



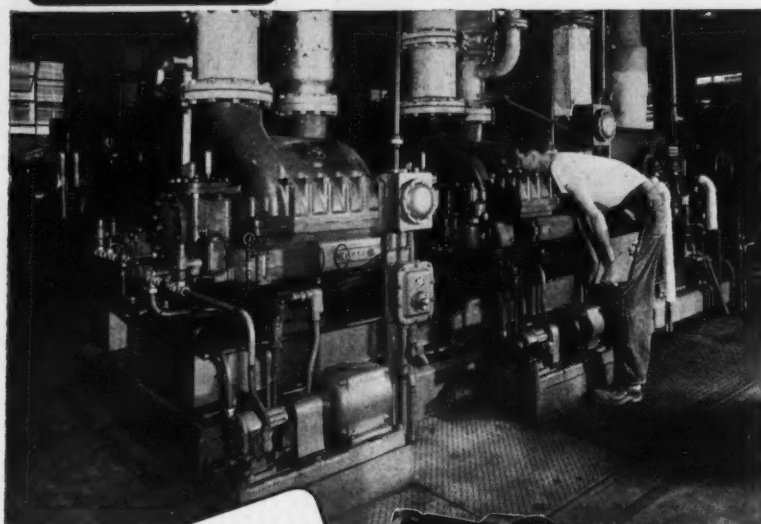
Mixing & Blending

Processing Equipment



ROPER
Rotary Pumps

All Ways Dependable
SINCE 1887



2 Series "K" Pumps
take this
Pressure Lubrication
Job in Stride



When Sun Oil Co. installed these Clark Compressors in their Marcus Hook Refinery, they were assured greatest dependability and efficiency from all components. For good reason! These compressors must work steadily to keep pace with ever increasing demands for petroleum products. That means the two Ropers — operating in the capacity of pressure lubrication — have a tough tour of duty as well. But, Ropers are rugged, so they take their gruelling job in stride.

REASONS WHY ROPERS ARE PUT ON THE JOB... AND STAY ON THE JOB! The above example is one of varied installations where Roper Series "K" Pumps serve best. This series is also adapted to hydraulic service, fuel supply, or transfer work pumping clean liquids. Series "K" pumps are self-priming, operate in either direction with equal efficiency, handle total suction lifts up to 25 feet. Roper's venturi and discharge principle, plus helical gears and shafts of hardened steel; accurately fitted bronze bearings; and compact, rugged housing all add up to dependability that keeps these pumps on the job. Series "K" pumps come in $\frac{3}{4}$ to 50 g.p.m. sizes; pressures to 150 p.s.i. Send for full details.

ROPER

GEO. D. ROPER CORPORATION
752 Blackhawk Park Avenue
ROCKFORD, ILLINOIS

ROTARY PUMPS

When inquiring check CP 8303 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Variety of fabrications being offered with polyvinyl plastic . . .

exhibits resistance to attack by acid, alkalis, oils, etc.

Uses: Equipment made from Agilide, a rigid polyvinyl chloride, can be used in many processing steps or in the laboratory — accordingly, as the plastic's properties meet requirements.

Features: Fabrications from Agilide can logically replace equipment previously made from steels and other metals with resultant savings in maintenance and replacement costs.

Description: Agilide exhibits resistance to attack by acids, alkalis, salt solutions, vegetable and mineral oils, and other corrosive media. It is non-flammable and physiologically inert.

Through a combination of extrusion, molding and plastic welding processes, fabrications of Agilide range from storage and chemical processing tanks and tank liners, pipe and duct lines, exhaust hoods and ventilators, to complete apparatus and equipment.

The use of fabricated equipment and pipelines is recommended for applications where working temperatures do not exceed 170°F.

(Agilide is being fabricated by the American Agile Corp., Dept. CP, 5806 Hough Ave., Cleveland 3, Ohio . . . or for more information check CP 8304 on handy form, pages 2 and 3.)

Offer two standard guns for hot gas welding of thermoplastics . . .

one is a gas-heated type; the other electrically heated

Uses: For the hot gas welding method of fabricating thermoplastic materials such as polyethylene, hard polyvinyl chloride, etc.

Description: The two standard types of guns being offered are a gas-heated model and an electrically heated type. Both types operate similarly, i.e. a stream of inert gas, such as nitrogen or compressed air, is passed at low pressure through a heating element and leaves the gun through the nozzle.

The temperature of the welding gas stream leaving the gun can be varied from 300 to 700°F.

(These welding guns are available through the American Agile Corp., Dept. CP, Plastics Division, 5806 Hough Ave., Cleveland 3, Ohio . . . or for more information check CP 8305 on handy form, pages 2 and 3.)

GIVE YOUR DRUMS, KETTLES, VATS, ETC., THIS Effective, Long-Lasting PROTECTION



"SNAP-IN" LINERS are readily dropped into place and held there by snapping liner lid over container rim. Lid (rubber lined) is then fastened down with adjustable fasteners, forming a leakproof, rubber-to-rubber seal. Liner can be quickly removed at any time.

GOODALL "SNAP-IN" Loose Rubber Liners are made to fit standard size metal drums, vats, kettles, etc., for lasting protection against acids and chemicals.

You ship just one container to our factory (a big saving over other methods) for use as a pattern. We can then make liners for any number of containers of identical size and shape.

"SNAP-IN" LINERS are custom made, with the high-quality rubber especially compounded to handle the specified product. Tough, durable, pliable. Thousands now in use demonstrate their practicability and economy. Contact Our Nearest Branch for Prices.



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles
San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities
Est. 1870

When inquiring check CP 8306 on handy form, pgs. 2-3

Beat the rap of high labor costs

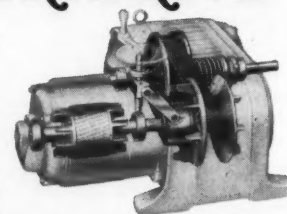
- Step up your output
- Increase workers' ability
- Improve product quality with



ONE YEAR
WAGES
(TWO SHIFTS)
\$7300

U.S. VARIDRIVE

Assume you are paying operators \$1.75 per hour for two 8-hour shifts per day. That's \$7300 annually for labor — probably far more than the machine cost. By installing a U. S. Varidrive Motor you can offset high and rising labor costs to the tune of 10%, 20%, 30% or more. Varidrive gives you infinite changeable speeds instantly. Operator efficiency is increased; so is production.



In countless instances the U. S. Varidrive Motor has paid for itself within a few weeks by stepping up output. Our Bulletin tells you why.

2 TO 10,000 RPM
 $\frac{1}{4}$ to 50 hp



U.S. ELECTRICAL MOTORS Inc.

Box 2058 Los Angeles 54, Cal. or Milford, Conn.

When inquiring check CP 8307 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Thirty-foot fall to concrete not harmful to water-filled, frozen plastic bottle . . .

gallon-size polyethylene container has polyethylene cap too; neck has pour-out lip

Uses: Suggested for packaging acids, food extracts, vitamin solutions, anti-freeze liquids, photosensitive materials, certain types of chemicals.

Features: Gallon plastic bottle is currently the largest of this type. Container is able to withstand very high impact and strain (see remarks below) and weighs only one lb. Neck incorporates a pour-out lip as well as three full threads for leakproof sealing when polyethylene cap is screwed on.

Description: New polyethylene bottle is called the Millplastic Gallon. Ruggedness is believed due to design which has the ideal relationship between diameter and height for greatest strength.

In testing, bottle was dropped from 30-foot height onto a concrete sidewalk after having been filled with water and frozen for 60 hours. Apart from surface scratches, the fall had no effect on the bottle nor did it cause contents to leak or spill. Twenty-four hours later, after thawing of bottle and contents, the experiment was repeated, again without ill effects to the bottle.

(Maker is Elmer E. Mills Corporation, Dept. CP, 2930 N. Ashland Ave., Chicago, Ill. . . . or for more information check CP 8308 on handy form, pages 2 and 3.)

Protects against irritants that commonly cause dermatitis . . .

skin cream is packaged in handy personalized tube

Uses: Skin cream for protecting against common irritants that cause industrial dermatitis.

Features: Packaged in handy personal-sized tubes for distribution through plant hospitals, first-aid nurse, stockroom, or employee store.

Description: Phlo is termed a 'neutral skin protector' and is a smooth white cream with low pH and non-irritating characteristics.

(Samples of Phlo are available from Chemical Specialties, Inc., Dept. CP, Springfield, Mass. . . . or for more information check CP 8309 on handy form, pages 2 and 3.)

Any surface becomes writing slate with non-glare paint . . .

easy to clean with chalk eraser, washes clean without harm to finish

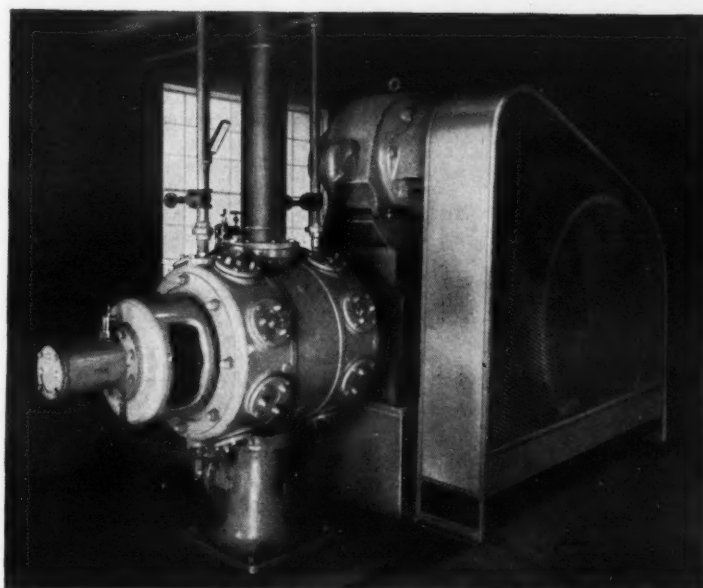
Uses: Transforms any surface into a chalkboard writing slate. Used for visual aids, bulletin boards, etc.

Features: Easily applied by brush or spray, the paint takes erasing well with an ordinary chalk eraser and can be washed clean without harm to the finish. Non-glare surface.

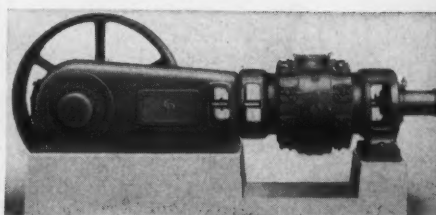
Description: Rite-On-Green paint is applied to clean, smooth, dry surfaces. One coat is usually sufficient for most surfaces; however, new plywood or other porous surface will require two coats.

(Development of Sapolin Paints Inc., Dept. CP, 229 East 42nd St., New York, N. Y. . . . or for more information check CP 8310 on handy form, pages 2 and 3.)

AIR FREE FROM



WITH OVERHEAD V-BELT DRIVE



CLASS T-BO BELT-DRIVEN
OIL-LESS CYLINDER COMPRESSOR

Since no oil, grease or other cylinder lubricant is required in CP OIL-LESS CYLINDER COMPRESSORS, they are ideal where it is essential that compressed air be absolutely free from oil to avoid injury to products.

Piston and rod, completely supported by tail rod and outboard crosshead, are full floating, removing all weight from cylinder wall and stuffing boxes. This assures long life of segmented carbon piston rings, with no need for periodically rotating them.

CP OIL-LESS CYLINDER COMPRESSORS are available in a wide range of sizes and ratings; in single and two-stage types; arranged for belt, motor or steam drive.

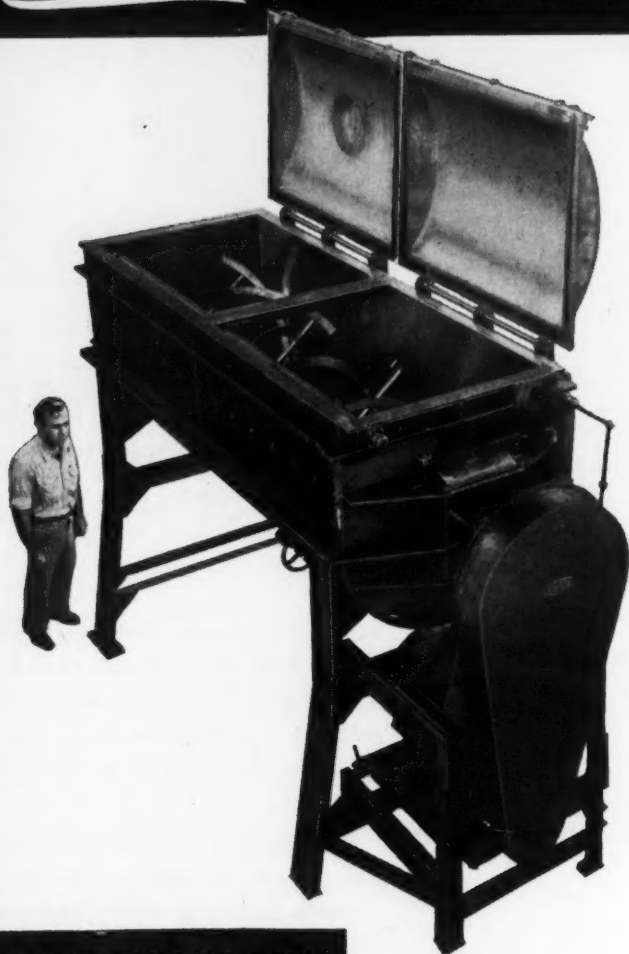
WRITE FOR BULLETIN 728-8



PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 8311 on handy form, pgs. 2-3

VACUUM PROTECTION for your VOLUME PRODUCTION



READ STANDARD
CORPORATION

Readco Spiral Ribbon Vacuum Mixers enable you to avoid undesirable oxidation ... to recover solvents and evaporate moisture from large batches without the excessive, detrimental temperatures necessary under atmospheric conditions.

The single packing gland construction of Readco Vacuum Spiral Ribbon Mixers necessitates sealing against vacuum only where the drive shaft enters the vacuum chamber. Lubricant cannot possibly enter the mixing chamber.

No pressure differential exists across the quickly removable split seals.

A quickly opened, flush-plug discharge gate prevents accumulation of dead volume. Single or divided jackets provide a wide range of temperature control. Bakery-Chemical Division, YORK, PENNSYLVANIA; LOS ANGELES, CALIFORNIA.

When inquiring check CP 8312 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**States efficiency of 99.99%
for filter used against
0.3 micron dusts . . .**

filter material contains high percentage of asbestos fibers

Uses: To protect workmen exposed to beryllium oxides, radioactive dusts and other hazardous particulate matter.

Features: Stated efficiency of filter against particles 0.3 micron in size is 99.99%.

Description: Called the Comfo Ultra-Filter Respirator, the filter construction embodies a high percentage of special asbestos fibers which are assembled in several metal bound layers. A large surface area is thereby presented with correspondingly low resistance to breathing. Filter unit is easily replaced.

Facepiece used on the respirator is designed to afford a quick, gas-tight fit regardless of facial shape or size. Construction of exhalation valve provides extremely low exhalation resistance. The respirator is designed to fit under all types of welding helmets and is compact and lightweight.

(Manufactured by Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. . . or for more information check CP 8313 on handy form, pages 2 & 3.)

Tests show advantages of refractory coating

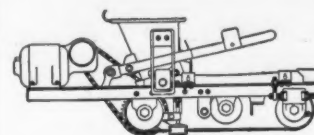
Photographs and drawings show results of tests demonstrating advantages of a coating for refractories. In addition this four-page bulletin briefs coating's applications for oil stills and heaters, flue and stack linings, stokers, combustion chambers, ceramic kilns, incinerators and smelters.

The product is recommended for new, old and damaged refractories, and as a maintenance coating. "Cera-Kote Refractory Coating" is issued on letter-head request to Williston & Company, Dept. CP, Peoples Bank Bldg., Delta, Ohio.

Engineering data on air compressors

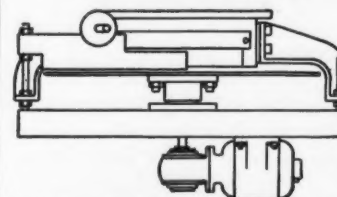
Complete engineering data in this four-page bulletin covers manufacturer's Type-M Line of motor driven compressors. Units described range from 250 to 1000 hp on standard two-stage models and 300 to 1000 hp on standard single-stage types. Bulletin M-65 is issued by The Cooper-Bessemer Corp., Dept. CP, Mount Vernon, Ohio. When inquiring specify CP 8314 on handy form, pages 2 and 3.

If your problem is **FEEDING . . .** CONSTANT WEIGHT FEEDERS



The revolutionary Hardinge Constant-Weight Feeder regulates the feeding of materials at a constant-weight rate, rather than a constant-volume rate. The feeder automatically compensates for changes in specific gravity and bulk-ing, due to moisture — which normally would cause irregular feeding.

DISC FEEDERS



Ideal for handling hot, sticky or bulky materials — the Hardinge Disc Feeder is simple, requires little head room, and has two capacity adjustments, one of which can be changed during operation: No bridging — no clogging.

Write for Bulletin 33-D-13 which describes the complete line of Hardinge feeders in detail.

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works
NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

When inquiring check CP 8315 on handy form, pgs. 2-3

Ship Chemicals?

Use

NORCO

Barrels

and Kegs



NORCO PACKAGES

Have definite advantages as containers for many hard-to-hold liquids, foods and chemical products. Micro-crystalline and other linings are available.

- Tight grained and non-porous.
- They are "stable"—minimum of shrinkage or swelling.
- They stand up unusually well in storage.
- Low tare weight.

Typical Usages: Phosphoric, acetic, sodium acetate and acid solutions.

In these sizes: 5, 10, 15, 30 and 50 gallon. Most sizes are available in I.C.C. Specifications.

Write for Unit NC 3 CP.

PUT YOUR PRODUCT IN SANITARY WOODEN BARRELS
Manufacturers of the largest variety of wooden barrels and kegs in America.

NORTHERN COOPERAGE CO.

551 Concord St. — St. Paul 7, Minn.
Riverview 4900

Division of Greif Bros. Cooperage Corp.

124

When inquiring check CP 8316 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Cobalt base alloy filter shows resistance to above 1000°F . . .

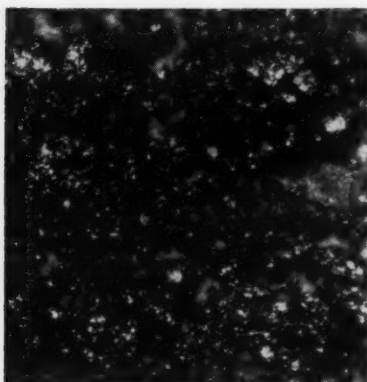
suitable for use with HCl acid under many conditions, also

Uses: In installations where porous metal filters find application and where the unusual properties of this material can be utilized to advantage.

Features: Both the tensile properties and oxidation resistance of this alloy, L-605, are substantially better than those of stainless steels at elevated temperatures.

Description: L-605 is a cobalt-base alloy of the following nominal composition: cobalt, 50%; chromium, 20%; tungsten, 15%; and nickel, 10%. Developed as a high temperature alloy, it is believed that L-605 will substantially extend the upper limit of temperature range at which porous metal filters may be used.

Where stainless steel filters are now recommended for long term use at



Structural characteristics of cobalt-base alloy filter material

maximum temperatures of 900 to 1000°F, substitution of L-605 alloy will permit going to temperatures several hundred degrees higher.

Corrosion properties of the material are exceptional in that it is quite suitable for use with hydrochloric acid under many conditions. It also shows a low corrosion rate in wet chlorine and is universally resistant to attack by anhydrous nitric acid.

(Porous L-605 filters are available in the same forms as those of stainless steel and other compositions from Micro Metallic Corp., Dept. CP, 30 Sea Cliff Ave., Glen Cove, N. Y. . . or for more information check CP 8317 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 8318 . . . see information request blank between pages 2-3.

Engineers report:



"No Durco Type F Valve has ever stuck!"

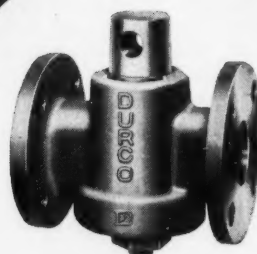
A year and a half of careful checking of several thousand Type F valves in actual installations has not revealed a single case of sticking. Even in the toughest chemical service, the Teflon sleeve prevents freezing and insures ready operation.

Let us send you all facts about this sturdy, simple corrosion resisting valve.

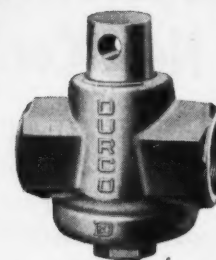


A product of
The Duriron Company, Inc.
Dayton, Ohio

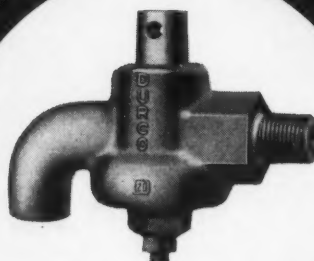
Manufacturers of corrosion resisting equipment exclusively since 1912.



Sizes: 1/4" to 2"
Flanged ends



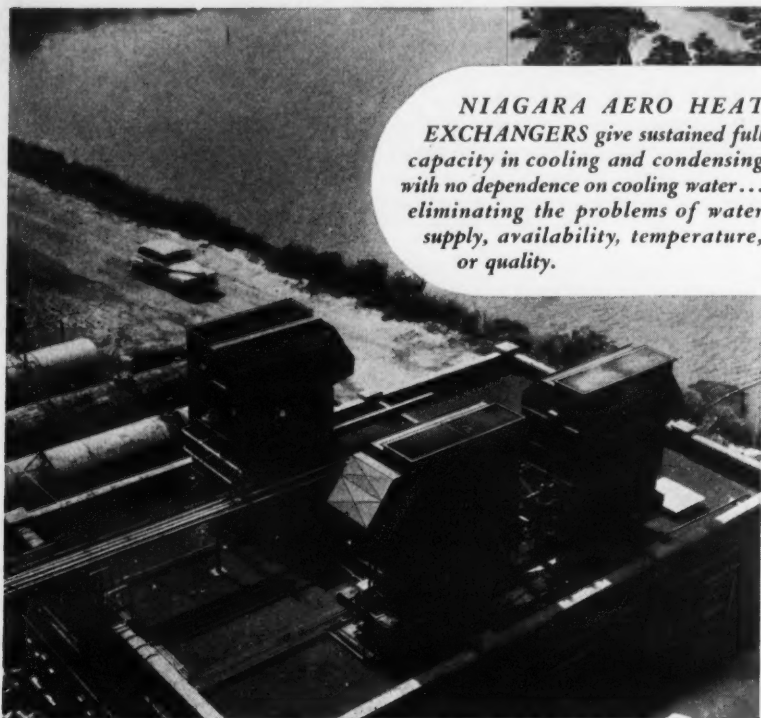
Sizes: 1/4" to 2"
Screwed ends



Sampling valve
male or female
connection



Write for Bulletin 647



NIAGARA AERO HEAT EXCHANGERS give sustained full capacity in cooling and condensing with no dependence on cooling water... eliminating the problems of water supply, availability, temperature, or quality.

Niagara Aero Heat Exchangers at a Plant of the Heyden Chemical Corp.

Still Operations Improved by a New Cooling Method

• **NIAGARA AERO HEAT EXCHANGERS** cool the reflux supply or condense vapors at a vacuum by controlled evaporation of water directly on the heat exchange surfaces.

Liquid or vapor temperatures are always held constant by the Niagara "Balanced Wet Bulb" control method, which automatically varies the cooling effect proportionately to the load. The distillation is therefore uniform throughout all changes in climatic conditions the year around; it is the same in the heat of summer as in the freezing cold of winter. Continuous maximum production is thus insured.

Non-condensibles are effectively separated at the condensate outlet, with notable sub-cooling after separation for greater vacuum pump efficiency.

Use of Niagara Aero Heat Exchangers reduces your operating costs and removes many sources of your troubles in distillation column operation. Ask for new bulletin #120.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities

When inquiring check CP 8319 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Provides atmosphere for surface treating metals . . .

catalytically cracks ammonia to deliver 150 cu ft gas/hr

Uses: Provides atmospheres for: clean non-decarburizing hardening, dry cyaniding or carbonitriding, carburizing, copper and silver brazing, nitriding, sintering and bright annealing.

Description: "Atmo-Gen" unit uses a catalyst-filled alloy retort and ammonia cracker. It also contains a tube type furnace with automatic temperature control. Capacity is 150 cu ft gas/hr.

(Product of Hevi Duty Electric Company, Dept. CP, Milwaukee 1, Wis. . . . or for more information check CP 8320 on handy form, pages 2 and 3.)

Dessicator plate is aluminum . . .

legs are integral, finish resists corrosive attack

Uses: Circular support for holding crucibles in dessicator.

Features: Made of aluminum. Support legs are integral and can't break off. Plate dissipates heat more quickly, and is finished to resist corrosive atmospheres.

Description: Cast-aluminum plate, 146 mm diam, is made for use in



standard 6" dessicator, or it may be used separately as a support and cooling block. Each of the six openings in the plate is numbered to simplify sample identification.

(Desiplate is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 8321 on handy form, pages 2 and 3.)



Serves the World with Fish Dehydrating and Reduction Equipment Through these Agencies:

WILBUR-ELLIS COMPANY, 334 California St., San Francisco 4, Tel. Garfield 1-1775. Cables: "Wilburell"

WILBUR-ELLIS CO. (Pty) LTD., 813 Grand Parade Center, Cape Town, So. Africa, Tel. 2-7595. Cables: "Wilburell"

BULLOCK-SMITH ASSOCIATES, 136 Liberty St., New York 6, N.Y., Tel. Beekman 3-0370-1. Cables: "Bul-smith"

FRAZAR & HANSEN, LTD., 300 Clay St., San Francisco 11, Tel. Exbrook 2-5112. Cables: "Frasen"

W. S. SANDERS, 1810 Core Avenue, Norfolk 7, Virginia, Tel. 51074

CITRUS CHEMICAL PRODUCTS, Inc., Plymouth, Florida, Tel. Plymouth 2211

Contact us—or any of these agencies for your dehydrating and reduction requirements.

Currently shipping fish reduction equipment to England, So. Africa, Peru, Norway, Canada, Mexico, and throughout the United States.

On receipt of request we will advise you of nearest P & L equipment installation and arrange for your inspection.

— MANUFACTURERS OF —

Reduction Equipment from "Bin to Sack" — Cookers — Hammer Mills — Rotary Fish Presses — Low Temperature Driers — Etc. Etc.

P & L WELDING & MACHINE WORKS

519 East LaPalma St., ANAHEIM, CALIF., Phone: Anaheim 4311

When inquiring check CP 8322 on handy form, pgs. 2-3



STRAINERS AND FILTERS AVAILABLE IN ALL TYPES AND SIZES

A longer lasting, accurately made filter or strainer increases your profits at every application. The skilled craftsmanship and selected quality materials used in the manufacture of Cleveland Wire Screen is your yardstick for discriminating buying. Custom designed strainer elements are produced in small or large production runs from Chrome Nickel or Copper Alloys. Write for Strainer and Filter Bulletin No. 7.

A CLEVELAND WIRE SCREEN FOR EVERY PURPOSE

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 8323 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Wide differential of engagement and disengagement speeds feature of clutch line . . .

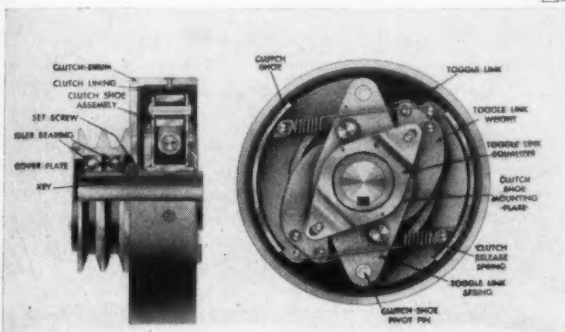
designed for operation on any 7 to 15 hp engine and have hub bores mating with standard shafts

Uses: These clutches can be used with any 7 to 15 hp engine with 1-1/8, 1-7/16 or 1 1/2" standard shaft.

Features: Have a normal engagement speed, i.e., 1100 to 1200 rpm but disengage as low as 800 rpm. This wide differential in speeds is made possible by a linkage connecting heel and toe of the two opposing shoes. This toggle lock is centrifugally actuated and equalized on both engagement and disengagement of the load.

Both clutch drum and pulley assembly ride free on dual ball bearings during idling periods.

Description: All models in the Tog-o-loc Series have hub bores mating standard engine shafts without the



Left view shows clutch with standard size pulleys with double grooves. Right view presents details of Tog-o-loc mechanism (see text)

necessity for any extension, grinding, boring or slotting. The clutches are available in two types; with standard size pulleys possessing single and double grooves; or with plain hubs onto which special service pulleys may be mounted.

(Clutches are manufactured by Salsbury Corporation, 1161 East Florence Ave., Dept. CP, Los Angeles 1, Calif. . . or for more information check CP 8324 on handy form, pages 2 and 3.)

Low carbon steel tubing has close tolerances . . .

applicable where non-ferrous tubing is being used in mechanical applications

Uses: Precision tubing may be substituted in many mechanical applications where non-ferrous and alloy metal tubing such as aluminum, copper, and copper base alloys are commonly used.

Features: Low carbon steel tubing is accurately drawn to close tolerances of inside diameter, outside diameter, and wall thicknesses.

Description: Tubing is available in a range of outside diameters from 0.500 to 0.010" with wall thicknesses down to 0.0015".

(Now being produced by Precision Tube Company, Dept. CP, 3824 Terrace St., Philadelphia 28, Pa. . . or for more information check CP 8325 on handy form, pages 2 and 3.)

DECEMBER, 1951

Up-to-the-minute data on pressure vessel outlets

IN THIS new Pressure Vessel Catalog 501 you will find the latest data covering pressure vessel outlets compiled as you would expect it to be by the originators of forged and rolled steel welding necks and nozzles.

The pages include up-to-the-minute information on seamless steel nozzles, welding necks, manways, and large diameter flanges for boilers, heat exchangers, and other pressure vessels. Of particularly timely importance

are data covering standards of Tubular Exchangers Manufacturers Association (TEMA Standards). A useful section on modern flange design covers codes, materials, and design procedures with typical calculation forms and examples of calculation.

This 118 page book is available without charge to anyone having a specific interest in outlets for pressure vessels. To obtain your copy see your Taylor Forge Distributor or **MAIL THE COUPON.**



TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS

General Offices and Works: P. O. Box 485, Chicago 90, Ill.

Offices in all principal cities

Plants at: Carnegie, Pa.; Fontana, Calif.; Hamilton, Ont., Canada

Send me a copy of your Pressure Vessel Catalog No. 501

NAME

POSITION

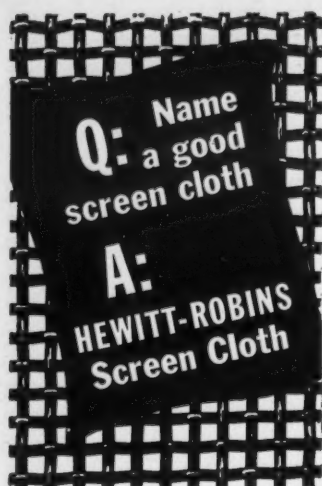
COMPANY

STREET ADDRESS

CITY ZONE STATE

515-1251 Mail to Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.

When inquiring check CP 8326 on handy form, pgs. 2-3



BECAUSE you increase the time between screen cloth changes—on any make of screen!

BECAUSE Hewitt-Robins Screen Cloth is made of Super-Gyraloy, the specially blended alloy steel wire that's the toughest, hardest screening surface ever developed.

BECAUSE Hewitt-Robins Super-Gyraloy Screen Cloth comes in the weave you want... the size opening you need.

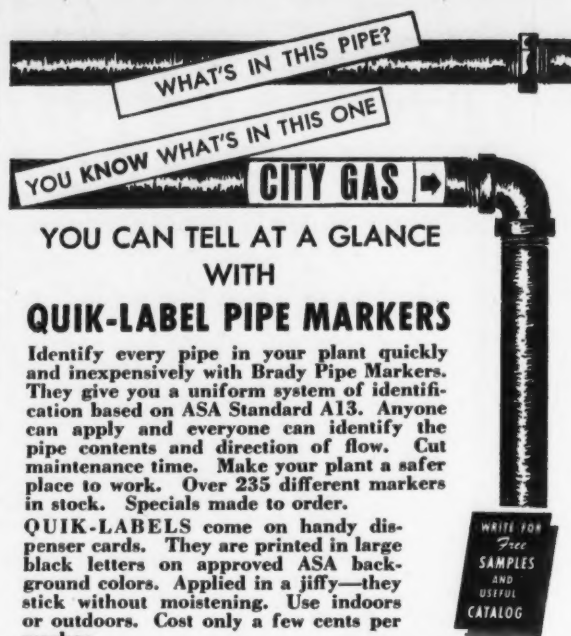
BECAUSE its heat treatment and micro-structure make Super-Gyraloy highly resistant to abrasion

without sacrificing ductility. You can actually bend a wire of this cloth around its own diameter without fracture.

SEND TODAY for Bulletin No. 113-A. Fully describes Hewitt-Robins Super-Gyraloy Screen Cloth, 3/16" to 6" openings, made from #12 gauge wire to 5/8" rod in square and rectangular openings, flat top and non-blind weaves. Also in Gyraloy (spring steel) stainless steel, Monel metal, brass or enamel coated in any standard diameter of wire. Robins Conveyors Division, 270 Passaic Ave., Passaic, N. J.



When inquiring check CP 8327 on handy form, pgs. 2-3



YOU CAN TELL AT A GLANCE WITH QUICK-LABEL PIPE MARKERS

Identify every pipe in your plant quickly and inexpensively with Brady Pipe Markers. They give you a uniform system of identification based on ASA Standard A13. Anyone can apply and everyone can identify the pipe contents and direction of flow. Cut maintenance time. Make your plant a safer place to work. Over 235 different markers in stock. Specials made to order.

QUICK-LABELS come on handy dispenser cards. They are printed in large black letters on approved ASA background colors. Applied in a jiffy—they stick without moistening. Use indoors or outdoors. Cost only a few cents per marker.



When inquiring check CP 8328 on handy form, pgs. 2-3

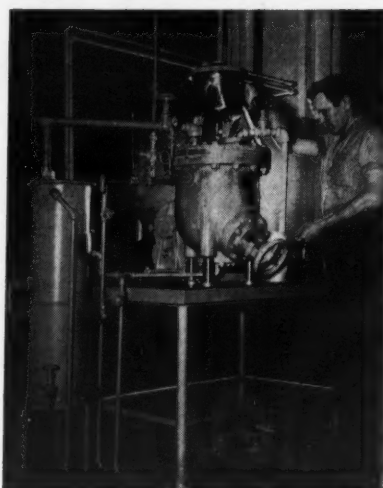
BUFLOVAK-DOPP PROCESSING KETTLES Efficiently Serve Many Industries

YOUR product can be processed in this Dopp Kettle that is installed in the BUFLOVAK Research and Testing Laboratory.

Larger equipment is also available.

Results are positive because they are conducted on a pilot plant scale.

Write for particulars.



BUFLOVAK-DOPP Processing Kettles are used for thorough mixing of a wide range of chemical and food products.

Performance records show considerable savings in steam, power and operating time.

Exclusive features in design and construction assure uniform mixing, heating and cooling. The result is a better, more uniform product, produced at lower cost!

Complete details upon request.

BUFLOVAK EQUIPMENT DIVISION
of **BLAW-KNOX COMPANY**
1645 Fillmore Ave. Buffalo 11, N. Y.

When inquiring check CP 8329 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Concrete sewer 7 miles long lined with vinyl plastic

A reinforced concrete sewer pipe 7 miles long is lined with a tough plastic sheeting that resists chemicals, is not appreciably affected by oxidation, has low water absorption and is not damaged by oil or grease. The plastic sheet ingredients are Geon polyvinyl chloride resin, inert pigments, and plasticizers. In installation, sheets are softened and welded into one continuous lining by a hot air torch. Pipe is lined only three-quarters of the way around, as gas area above the water is only portion of pipe which requires full protection.

The problem of septic sewage, such as encountered in this California line, depends on several factors, all contributing to corrosive conditions. Hydrogen sulphide gas, on oxidation, causes concrete disintegration.

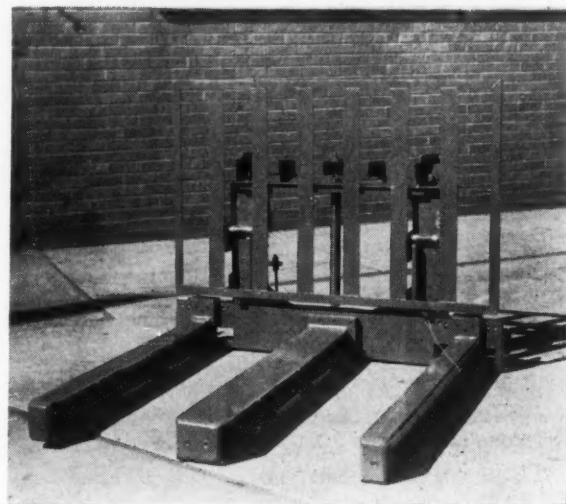
In addition to pipe, the plastic lining may be used for manholes, underground gauging chambers, distribution chambers and for concrete tanks. (B. F. Goodrich Chemical Co., Rose Bldg., Cleveland, Ohio.)

Adapt any fork lift truck to handling unit loads without pallets...

weight of load is transferred into gripping force by a mechanism within the forks

Uses: For palletless handling of cases, boxes and similar containers when arranged in compact, well-balanced loads. Illustration shows how such loads, running up to heights of 6 or 7 rows, may be lifted and transported and even tiered 3 loads high.

Features: Operation of the special forks is completely automatic. Installation involves no linkage between the



Forks for handling palletless loads attach to fork bars or carriage assembly of fork truck

fork truck and the forks and is made with a minimum of expense. Horizontal pressure of the fork prongs which grip the two supporting rows of cases on each side is actuated by weight of the rows of cases above.

In some instances elimination of pallets has increased highway truck payloads by as much as 76 cases. There is also some savings in space for although the equivalent of one row is taken up by the forks, most pallets take up slightly more than the space of one row.

Description: In assembling loads, two rows are first lined up. These are known as the stretcher course or pallet course. Middle fork has prongs on each side,

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

while outside forks have prongs only on inside. These gripper contacts consist of steel plates faced with molded rubber. They are individually replaceable. The fork accessory itself attaches to fork bars or carriage assembly of truck by adapters. These are supplied with each special fork unit.

As soon as forks begin to lift load a linkage causes weight of load to force gripper contact plates against



Load "lifts itself by its own bootstraps." Weight of upper cases actuates grip of forks on lower rows

side of cases forming pallet course. Weight of load, not any mechanism of truck, constantly exerts force and constant gripper action results. Spacing of prongs or forks is according to size of cartons comprising load. Adjustments to increase or decrease this up to 3" are easily made. In shipment of loads so unitized it is said that no shifting during over-the-road travel of several hundred miles is experienced.

Although not yet in general commercial use, fork is designed on same principle successfully used for handling cement blocks without pallets.

(Package for palletless handling of cases and boxes is a development of Schmidgall Mfg. Co., Fork Div., Dept. CP, 307 Cass St., Peoria, Ill. . . . or for more information check CP 8330 on handy form, pages 2 and 3.)

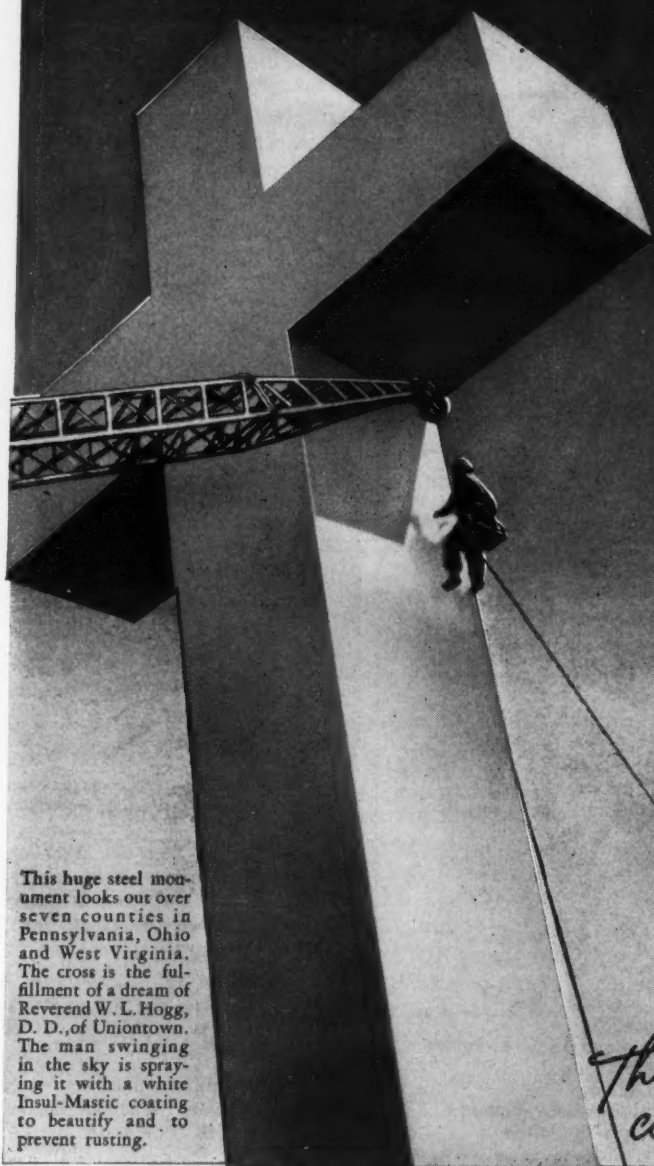
Air conditioning, handling, and cleaning

Detailed and described in 16-page, full-line booklet is equipment for air conditioning, for air handling, and for air cleaning. Air conditioners comprise unit conditioners, unit heaters, hermetically sealed compressors, and condensers and water coolers.

Air handlers include ventilation, conditioning, and heating equipment, and various types of fans. Air cleaning section deals with electronic equipment. Booklet B-5164 is issued by the Sturtevant Division of the Westinghouse Electric Corporation, Dept. CP, Hyde Park, Boston 36, Mass. When inquiring specify CP 8331 on handy form, pages 2 and 3.

INSUL-MASTIC Coatings

As Spectacular as the jobs they serve



This huge steel monument looks out over seven counties in Pennsylvania, Ohio and West Virginia. The cross is the fulfillment of a dream of Reverend W. L. Hogg, D. D., of Uniontown. The man swinging in the sky is spraying it with a white Insul-Mastic coating to beautify and to prevent rusting.

A sixty foot steel cross on a Pennsylvania mountain top... giant fractionation towers in a Texas refinery... acid tanks in New Jersey... coking ovens in Maryland... the hydrogen bomb plant. In thousands of places like these, Insul-Mastic coatings insulate, vaporseal and prevent corrosion.

All Insul-Mastic coatings are homogenized and are manufactured with two particular objectives; to resist all corrosive agents... from moisture to acids... and to have exceptionally long life. In addition to these qualities, certain Insul-Mastic coatings contain cork and are excellent insulators. Other uses for Insul-Mastic are vaporsealing thermal insulation and moisture sealing building walls.

Insul-Mastic's outstanding quality is the reason for its place on the most spectacular... and exacting... projects where protection of metal, masonry or insulation is important.

Write for complete information and the name of our nearest representative.

Think first of the coatings that last!

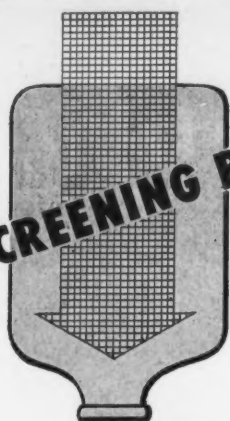
Insul-Mastic Corporation OF AMERICA

1165 OLIVER BUILDING • PITTSBURGH 22, PA.
Representatives in Principal Cities



When inquiring check CP 8332 on handy form, pgs. 2-3

ELIMINATE SCREENING BOTTLENECKS



**WITH A
SWECO
SEPARATOR**



SINGLE OR MULTI-
DECK WET OR DRY
CLASSIFYING AND
DEWATERING

The SWECO Separator with its unique screening action is continually eliminating screening bottlenecks in processing industries of all types. Its capacity per square foot of screening area is greater than for any other screening device known. The life of the screen cloth is guaranteed and long exceeds expectations of experienced users, reducing down time and maintenance costs. Only three moving parts; no substructure vibration; no V-belt drives. Completely contained unit ready for operation when electrical power connection is made. Write for complete details.



The SWECO SEPARATOR

Division of **SOUTHWESTERN ENGINEERING COMPANY**
4800 SANTA FE AVENUE • LOS ANGELES 58, CALIFORNIA

When inquiring check CP 8333 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Split-second connection
has only 0.0003 ohm
resistance . . .**

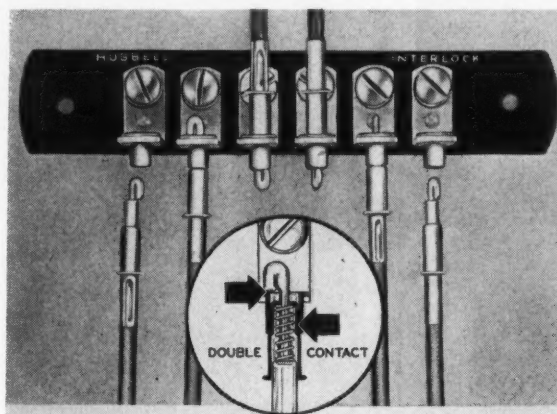
vibration, moderate stress, overloading do not spoil excellent electrical properties

Uses: Connectors may be used where any semi-permanent electrical connections are to be made. They can be employed for any length of time — retaining excellent electrical characteristics.

Features: Only a fraction of a second is needed to make a connection that will withstand vibration, moderate stress, overloading and consequent heating. When changes require it, the connectors are quickly and easily pulled apart and are then ready for reuse in a new circuit.

Description: "Interlock" connectors, as the name suggests, are locking connectors. A spring mechanism built into the wire lead exerts pressure of a lug against a knife edge, when they are inserted. In addition to this contact, a frictional surface is brought into play between the wire end and terminal.

Manufacturer's tests showed that on DC these connectors had an average resistance of only 0.0003 ohms; maximum resistance for any one sample being only 50% higher.



Drawing shows the two contacts. Leads are simply plugged into terminal — are equally easy to remove

Temperature rises with operating loads up to 200% rating were within allowable limits and no failures resulted. The heating did cause some rise in connection resistance, but in the most accentuated cases did not result in more than a 0.0006 ohm connection.

When subjected to 18 hours of vibration (0.06 inch amplitude at 10 to 50 cps) no lead came free; no plugs or jacks came loose; and, connection resistance dropped noticeably.

These connectors also remained operative under moderate mechanical stresses. They are rated at 25 lb — none failed at less than 33 lb, some lasted until 50 lb had been applied.

A great variety of shapes and styles is available. Those illustrated are rated for 110 v, 10 amp and maintain a contact pressure of 20 oz.

(Product of Harvey Hubbell, Inc., Dept. CP, Bridgeport 2, Conn. . . . or for more information check CP 8334 on handy form, pages 2 and 3.)



**Have you
changed
your
address
recently?**

• If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

**mail this request to
READER SERVICE DEPT.
CHEMICAL PROCESSING**

111 East Delaware Place
Chicago 11, Illinois

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Former Company Affiliation

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Former Address

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Your Name Present Title

.....
Present Company

.....
Main Product

.....
Rating of Company

.....
Street Address

.....
City Zone No. State



CHEMICAL PROCESSING

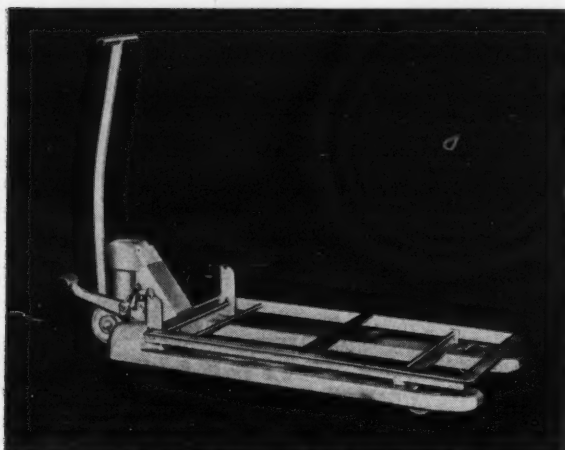
PROCESSING EQUIPMENT

Now pallet truck can handle skid platforms too . . .

a hinged-superstructure adapter makes this possible
Uses: Attachment enables conventional pallet trucks to lift and handle skid platforms.

Features: Hinged superstructure can be raised out of the way when handling pallets, and lowered into position when handling skid platforms, thus enabling a single truck to be used for handling both types of equipment.

Description: Conventional pallets are low and have boards at both top and bottom. Thus, a special truck



with lowered height of only $3\frac{1}{4}$ " is required. Skid platforms, on the other hand, are usually higher, have no bottom boards, and require the use of a platform truck having a 6" or more lowered height. It is because of this that the adapter must be employed if one truck is to be used for both pallets and skids.

(Product of The Raymond Corporation, Dept. CP, 5785 Madison St., Greene, N. Y. . . or for more information check CP 8335 on handy form, pages 2 and 3.)

Scores of label ideas and forms for as many purposes

This 24-page catalog illustrates countless types, sizes and forms of gummed and ungummed labels. The ideas presented are actual representations in color of those labels prepared for firms for packaging and mailing purposes. Various types of label moisteners, tape dispensers and related equipment are described. "Ever Ready Label Idea Book" is issued by Ever Ready Label Corp., Dept. CP, 357-363 Cortland St., Belleville 9, N. J. When inquiring specify CP 8336 on handy form, pages 2 and 3.

Aircraft windshield research

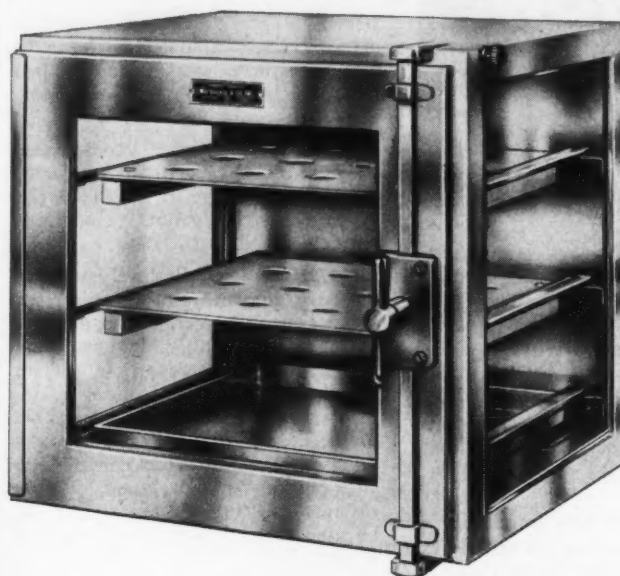
Electrically-heated, ice-free, failure-proof windshields for military aircraft is the goal of a program underway at Armour Research Foundation of Illinois Institute of Technology. Studies are being made on why laminated windshields fail and how to heat them to prevent icing. A better method of mounting windshields in planes is also sought.

In one test, alcohol, cooled to 90° F below zero, passes across one side of a pane of glass. Heat supplied by an electric current, is stepped up slowly on the other side until the temperature rises to about 500° F and the glass breaks.

One of numerous possible causes of failure is the "hot spot" created in the center when the windshield loses heat to the cold outer mounting. Heating the mount may answer this problem.

There's a new *Desiccating Cabinet* in the

HARSHAW LINE



★ It's designed for use in metallurgical, chemical, and clinical labs

★ It's made of STAINLESS STEEL

★ It's completely air-tight and moisture proof

Here's the answer to your demand for a desiccating cabinet that is durable, air-tight and moisture proof, and adaptable to many applications. Built for convenient use, this attractive new cabinet will serve well in the metallurgical, chemical, or clinical laboratory. It incorporates many useful features:

1. Specially designed warp-proof, air-tight door which is gasketed with a pure gum rubber seal.
2. Needle valve to relieve pressure.
3. Large capacity.
4. 18-8 stainless steel throughout.
5. $\frac{3}{16}$ " glass windows which are tightly cemented to the frame.
6. Adjustable asbestos shelves.

This new cabinet may be used for cooling ignition samples, or for storing metallurgical samples, and it is also ideal for storing dissecting instruments and other types of surgical instruments. The shelving consists of two asbestos shelves, 8" x $9\frac{3}{4}$ ", each with twelve $\frac{1}{8}$ " holes, and one removable stainless steel tray, 8" x 9" x $\frac{5}{8}$ ", to hold approximately one pound of desiccant. Also included

are three sets of removable shelf brackets with runners adjustable every $\frac{1}{2}$ ". Pressed feet on the bottom of the cabinet and corresponding indentations on top facilitate stacking and storing so that several of these cabinets may be kept in a relatively small space. Inside measurements are: height, 12"; width, 11 $\frac{1}{2}$ "; depth, 10". Outside measurements are: height, 12 $\frac{1}{2}$ "; width, 12 $\frac{1}{2}$ "; depth, 12 $\frac{1}{2}$ ".

H-18877—Stainless Steel Desiccating Cabinet. Each \$67.50

Quantity prices on request.

HARSHAW SCIENTIFIC
DIVISION OF THE HARSHAW CHEMICAL CO.
CLEVELAND 6, OHIO

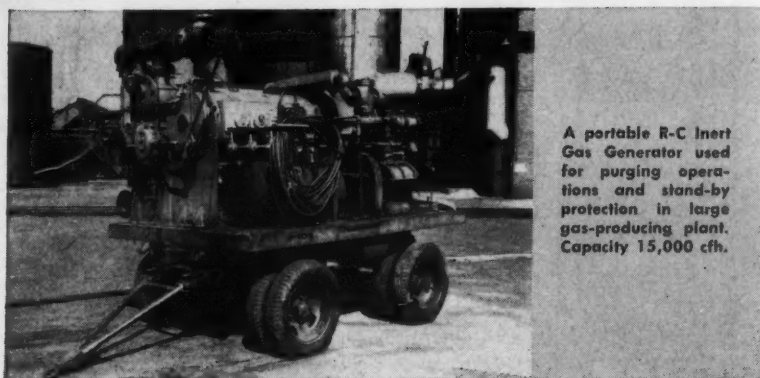
Cleveland 6, Ohio
1945 East 97th St.
Cincinnati 2, Ohio
224-226 Main St.
Detroit 28, Mich.
9240 Hubbell Ave.



Houston 11, Texas
6622 Supply Row
Los Angeles 17, Calif.
3237 S. Garfield Ave.
Philadelphia 48, Pa.
Jackson & Swanson Sts.

When inquiring check CP 8337 on handy form, pgs. 2-3

YOU CAN'T RISK FIRES NOW!



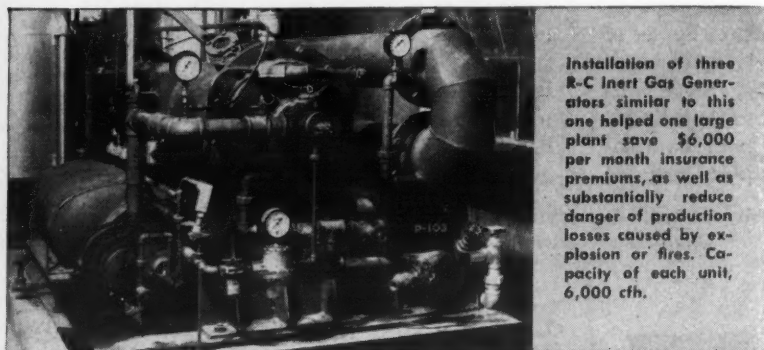
A portable R-C Inert Gas Generator used for purging operations and stand-by protection in large gas-producing plants. Capacity 15,000 cfm.

Today's urgent production demands can tolerate no unwarranted risk of interruption by explosions which might cause even small fires or other plant damage. Against such hazards, R-C Inert Gas Generators provide positive, economical protection.

This protection is essential in plants where inflammable gases, liquids, explosive dusts and other dangerous materials are handled, processed or stored. Available either in stationary or mobile units, R-C Inert Gas Generators greatly reduce the risks from fires caused by explosions. They are compact, simple and sturdy in construction and operate at extremely low cost. Available in capacities from 1,000 to 35,000 cfm.

If your operations involve materials or processes which might cause explosion-produced fires, investigate the protection afforded by R-C Inert Gas Generators. Installation costs in many cases can be offset by insurance savings. Ask us for details.

ROOTS-CONNERSVILLE BLOWER CORPORATION
510 Richland Avenue, Connorsville, Indiana



Installation of three R-C Inert Gas Generators similar to this one helped one large plant save \$6,000 per month insurance premiums, as well as substantially reduce danger of production losses caused by explosion or fires. Capacity of each unit, 6,000 cfm.

ROOTS-CONNERSVILLE

ONE OF THE DRESSER INDUSTRIES



When inquiring check CP 8338 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Hydrostatically marks
level along line
80 ft long . . .**

simple, durable construction gives good service in rough use

Uses: Device is a fast method of marking levels accurately. It can be used wherever construction, repair work, pitched piping, etc., are being done.

Features: Simple construction makes this a rugged, though accurate, instrument. Range of up to 40 feet in any direction from center point can be reached.

Description: Hydrolevel is a leveling device consisting of a liquid reservoir-reel, with hanger, 40 feet of transparent plastic tubing, and a level gauge and scriber combination. In use the amount of tube needed is run off the reel. Large bubbles can be worked out of the flexible tube. Reel-reservoir is hung or placed at a convenient reference point. Level of liquid in gauge remains constant so that scriber can be used to mark same level wherever needed.

(Device is a product of Hydrolevel, Dept. CP, 53 De Soto Ave., Ocean Springs, Miss. . . . or for more information check CP 8339 on handy form, pages 2 and 3.)

**Motor starter components
side by side . . .**

across-the-line device contains circuit breaker

Uses: Across-the-line motor starter. **Features:** Components are mounted side by side. Unit was developed for use where this mounting is desired for reasons of space and arrangement.

Description: Device has circuit breaker and same self-indicating slam-proof handle as the standard design with vertical mounting. This handle has separate positions for on, tripped, off, reset, and open cover, and will accommodate up to three different padlocks.

Starter is available in Sizes 0, 1 and 2 in sheet-steel enclosures for NEMA Types I, IA and V. Certain modifications can be supplied: built-in control-circuit transformer, start-stop pushbuttons, hand-off-auto selector switch, control relay, extra electrical interlocks, and inductive shunts.

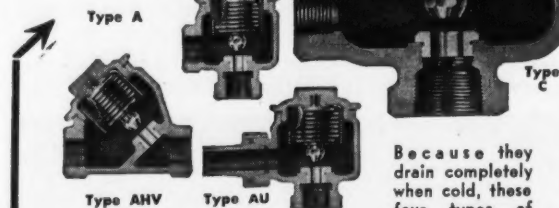
(Developed by Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 8340 on handy form, pages 2 and 3.)

NICHOLSON MAKES

FREEZE-PROOF

Steam Traps

for Every Plant
Use



Because they drain completely when cold, these four types of Nicholson steam traps are positively freeze-proof. Can be freely installed outdoors. Universally recommended for use in lines which need not be in continuous use during cold weather, because they are freeze-proof and because their 2 to 6 times average drainage capacity results in minimum heat-up time. The non-air-binding feature of Nicholson traps also notably facilitates heat transfer in severe weather. Sizes 1/4" to 2"; pressures to 225 lbs.

BULLETIN 450

181 Oregon St.
Wilkes-Barre, Pa.

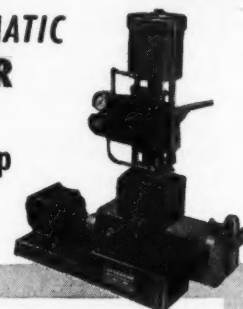
W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 8341 on handy form, pgs. 2-3

Lapp AUTO-PNEUMATIC PULSAFEEDER

piston-diaphragm
metering chemical pump
with automatic output
control



Applicable to all pneumatic or electro-pneumatic instrumentation. Provides automatic metering in response to variable flow, pH, temperature, liquid levels, pressure, or other processing variables. Operates at constant speed—variable flow results only from variation in piston stroke length, controlled by pneumatic cylinder. Pumping head isolates chemical being pumped.

WRITE for complete description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 461 Maple St., LeRoy, N. Y.

Lapp

PROCESS EQUIPMENT
CHEMICAL PORCELAIN VALVES • PIPES • RASCHIG RINGS
PULSAFEEDER • CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 8342 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Motor controls designed for outdoor uses . . .

consist of across-the-line starter with circuit breaker — all in rain-tight enclosure

Uses: Motor control units for outdoor applications.

Features: Rain-tight design.

Description: Units consist of a combination across-the-line starter with circuit breaker — all in a rain-tight closure fitted with either a built-in 'start-stop' push-button or 'hand-off-auto' selector switch.

Hinged cover can be swung open or latched and padlocked closed. Neoprene gasket around edge of cover and protective shield at the top of the enclosure afford rain-tight feature. Circuit breaker handle has position for 'on', 'tripped', 'off', 'reset', and 'open cover'.

Unit is surface-mounted and has threaded hub accommodating 1 1/4" conduit connection. Knockouts at sides and bottom of enclosure are provided for convenience. When required, one or two control relays, a third overload relay, or a transformer can be supplied.

Specifications: Class 11-206-NR available in NEMA sizes 1 through 5; standard voltages are 220 and 440, 60 cps. Special designs are for voltages to 600.

(Product of the Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 8343 on handy form, pages 2 and 3.)

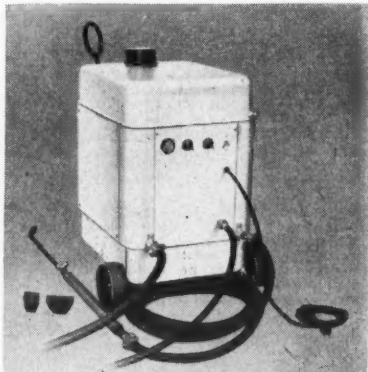
Cleans equipment, floors 8 to 10 times faster than manual methods . . .

operates on 60-150 lb steam and higher; rolls right to the cleaning job

Uses: Steam cleaner operates on any steam supply of 60 to 150 lb for removing dirt from machinery, equipment, floors, etc. Mobile — can be rolled right to the cleaning.

Features: Said to clean 8 to 10 times faster than by bucket-brush-and-scraper or hand-cleaning methods.

Description: Model F-15 Hypressure Jenny steam cleaner mixes the steam supply with proportions of water and cleaning solution for cleaning, sanitizing, and deodorizing. Connection to steam, water, and 110 v electrical supply is required. Afterwards, a flick of a switch produces anywhere from 45 to 90 gal/hr of boiling hot chemical vapor spray. Unit can be adapted for steam supplies in excess of 150 lb.



High-pressure steam cleaner

Included with the unit are 25' of vapor hose, and cleaning gun with nozzle control system. Weight is approximately 240 lb and overall dimensions are 37" x 27" x 37".

(Development of Hypressure Jenny Division of Homestead Valve Manufacturing Company, Dept. CP, Coraopolis, Pa. . . . or for more information check CP 8344 on handy form, pages 2 and 3.)

ALL-METAL EQUIPMENT USED TO PRODUCE DE-IONIZED WATER

Mineral content reduced to less than 10 parts per million

The equivalent of distilled water, with a mineral content of less than 10 ppm—a 96% reduction—is flowing from the all-Monel de-ionizing system at the Swansboro Ice Company, Swansboro, North Carolina.

This equipment operates on the two-stage cation- and acid-removing principle. In the first stage, mineral salts are converted to their equivalent acids by exchanging the original cations for hydrogen ions. The second stage removes the entire acid molecule, leaving the effluent water free from the original dissolved solids.

This is the only process, other than distillation, which removes all ions from water. But since such high purity water is obtained by de-ionization, even a trace of metal pick-up can seriously alter the final purity.

Therefore, metal equipment used must be virtually inert to the water carried through it. For several years, piping and fittings of Monel had been used in de-ionization, but it was not realized that entire units could be made of Monel. Then, with the Swansboro installation, it was proved that Monel's resistance to water was so high that metal pick-up from it would affect water purity negligibly, if at all.

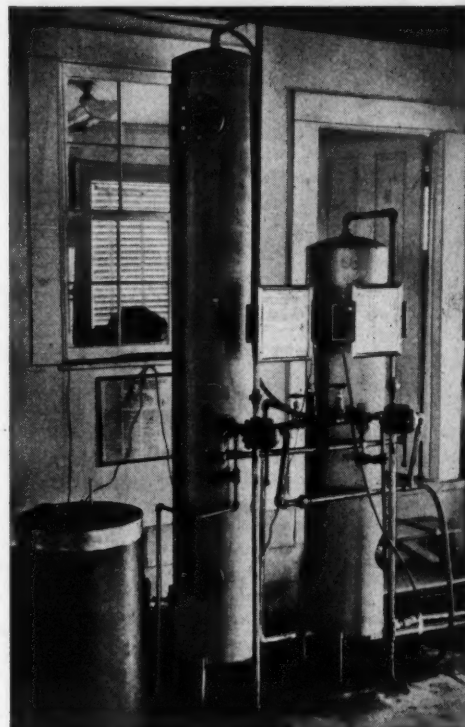
After the equipment had been in use for an entire summer, producing 500 gallons of de-ionized water an hour, the fabricator, Hungerford & Terry, Inc., of Clayton, New Jersey, reported that there had been no detectable metal pick-up from the Monel surfaces.

Right now nickel and nickel alloy deliveries are extended because so much is being diverted for essential defense production. But if you have a high-purity problem, here is a practical suggestion:

Write INCO's Corrosion Engineering Service, outlining your problem. They will be glad to help you search out a solution.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N.Y.

When inquiring check CP 8345 on handy form, pgs. 2-3



This all-Monel de-ionization unit, in service at Swansboro Ice Company, Swansboro, N. C., reduces the mineral content of well water from 250 ppm to 10 ppm, with flow of 500 gallons an hour. The entire unit is Monel, except the side tanks containing regenerating materials—yet after a full summer's operation, there had been no detectable metal pick-up, according to the fabricator, Hungerford & Terry, Inc., Clayton, N. J.

EMBLEM OF SERVICE
NICKEL INCO ALLOYS

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL • "S"® MONEL
NICKEL • LOW CARBON NICKEL • DURANICKEL®
INCONEL® • INCONEL "X"®



this STANDARDAIRE
handled *1 1/3 billion*
cu. ft. of high
pressure air
in 15 months

Then we dismantled the unit

... FOUND IT AS GOOD AS NEW

• Unit 9B16-213, for 15 months of day and night outdoor service, was operated beyond its rated capacity to meet unforeseen demands. It was replaced by a larger Standardaire Blower. The engineer of this plant asked that the hard working unit be sealed and returned to our factory so that he personally could observe the dis-assembly and measurements for wear.

• Main and Gate Rotors like new—interior of blower completely dry and free of oil—no wear in other internal parts.

• Timing Gears on Gate and Main Rotors—wear very slight—no increase in back lash could be detected.

Write for specific data—Dept. E36.
Read Standard Corporation, 370
Lexington Ave., New York 17, N. Y.

• Axial clearance of Main Rotor Shaft Thrust-Radial Bearing, increased less than .0005"—other bearings in perfect order.

• Even at the extremely high peripheral speed of these gears, they were found to be very quiet in service.

• Standardaire Blowers are sturdy—precision built units with proved staying power.



BLOWER-STOKER DIVISION

READ STANDARD

CORPORATION

NEW YORK • CHICAGO • ERIE • YORK • LOS ANGELES

When inquiring check CP 8346 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Joint for electrical duct is easy to install . . .

both ends of connector are the same, no right- or left-hand trouble

Uses: For joining electrical duct for 600 to 4000 ampere service.

Features: Right- and left-hand mating is not required when installing—tie plates and nuts fasten joint in place.

Description: Joint is designed to fit duct and has factory installed bolts in place, ready for use. Installation is a matter of placing the joint and tightening nuts. Joint is reported to have an extremely low, balanced voltage drop. Totally enclosed construction helps maintain high mechanical and dielectric strength.

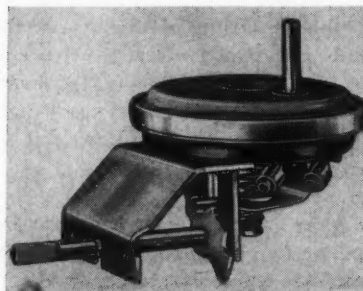
(Product of Square D Company, Dept. CP, 6060 Rivard St., Detroit 11, Mich. . . . or for more information check CP 8347 on handy form, pages 2 and 3.)

Small pressure change throws 115 volt switch . . .

designed for water level control at 7 to 10 inches of water

Uses: Designed primarily for level control in automatic washers—useful for other level or low pressure controls.

Features: Very small pressure changes can be used to actuate this switch. Set point is easily adjusted by



Adjusting cam shown connected to shaft under switch

changing cam position for any integral number of inches of water between 7 and 11 inches.

Description: Water level is balanced out by air pressure and by a spring loading system which is adjustable through changing the cam position. Diaphragm movement throws a snap-action SPDT switch rated at 10 amp, 115 v. Unit is only 4-3/4 x 3-1/4".

(Made by Acro Manufacturing Company, Dept. CP, Columbus 16, O. . . . or for more information check CP 8348 on handy form, pages 2 & 3.)

Fast, Uniform Drying On Jobs Like These

Allis-Chalmers Dielectric Heaters

OFTEN DIELECTRIC HEATING is the only solution to a drying problem requiring speed and uniformity. Here are some of the jobs you can do with versatile Allis-Chalmers dielectric heaters:

- | | |
|------------------------|--------------------------------|
| 1. Core Drying | 7. Heating rocket fuels |
| 2. Twist setting | 8. Drying gunpowder |
| 3. Sterilizing | 9. Vulcanizing rubber |
| 4. Preheating plastics | 10. Creating chemical reaction |
| 5. Drying rayon fibers | 11. Woodgluing |
| 6. Preheating linoleum | |

Continuous conveyors can carry the material between the electrodes for drying. Space requirements are small. Drying takes only a few minutes.

If you have a problem of this type, call your nearby Allis-Chalmers district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3356

ALLIS-CHALMERS

When inquiring check CP 8349 on handy form, pgs. 2-3

Specifications for a Good IMMERSION HEATER

SEAMLESS STEEL OR COPPER BLADES (tubes)—strong, rigid, durable—giving maximum protection to their internal structure. One, two or three blade styles, for oil or water.

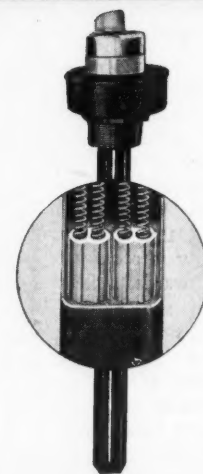
NICKEL—CHROME RESISTANCE WIRE in high-quality refractory tubes, definitely locating the elements in relation to the metal casing for its entire length.

ALL FREE SPACES filled with refractory powder by method that assures maximum heat conduction and absence of dead air.

TERMINAL HEAD welded or brazed to blades. Removable outlet box (with or without switch) can be rotated to suit wiring. Heat can be uniformly maintained for entire length of unit or concentrated at selected portions.

XXXX

Those are the highlights of the TRENT specifications—proven in hundreds of different Immersion Heater applications to provide MORE UNIFORM HEAT, with minimum maintenance. Write for Bulletin 74-TA.



TRENT INC.
Electrically Heated Industrial Equipment
235 LEXINGTON AVE. PHILA 27 PA.

When inquiring check CP 8350 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Adds 25-hp drive to line of variable-speed units . . .

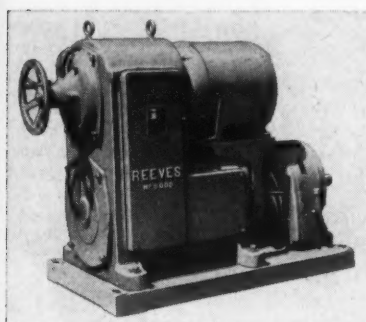
complete, self-contained power plant within itself for speed ranges from 2:1 to 6:1

Uses: Twenty-five horsepower variable-speed drive for all speed ranges from 2:1 to 6:1.

Features: Model No. 8000 Vari-Speed Motodrive is new size to maker's line of drives.

Description: No. 8000 is a complete, self-contained variable-speed power plant. It combines a speed-varying mechanism, any one of several standard constant-speed motors, and a built-in helical gear reducer.

Offered in horizontal and vertical designs; handwheel control is standard, although electrical or automatic hydraulic controls are



25-hp variable-speed drive

available. A tachometer, specifically calibrated, may also be attached.

(Development of the Reeves Pulley Company, Dept. CP, Columbus, Ind. . . or for more information check CP 8351 on handy form, pages 2 and 3.)

Pipes snug to wall, floor, easily turned by means of ratchet wrench . . .

12-15% more turning leverage than equivalent size conventional wrenches

Uses: Ratchet type pipe wrench — 18" size for 3/4 to 2 1/2" pipe. A 14" and a 24" size will be added to line shortly.

Features: Handles pipe snugged up against floors, walls, and corners just as easily as exposed pipe. Method of gripping the pipe gives 12 to 15% more turning leverage than the conventional pipe wrenches of equivalent size.

Description: Special toggle design applies force to the circumference of the pipe so that crushing action is minimized. "V" shaped swivel jaw and special shaped opposing jaw align themselves on the pipe. A constant leverage can be maintained for all openings.

Jaw inserts are tempered tool steel. Body of wrench is made of chrome-moly steel — hardened and drawn. Ratchet releases itself easily for another grip.

(Development of Lurie & Lurie, Dept. CP, 126 N. Union Ave., Chicago 6, Ill. . . or for more information check CP 8352 on handy form, pages 2 and 3.)



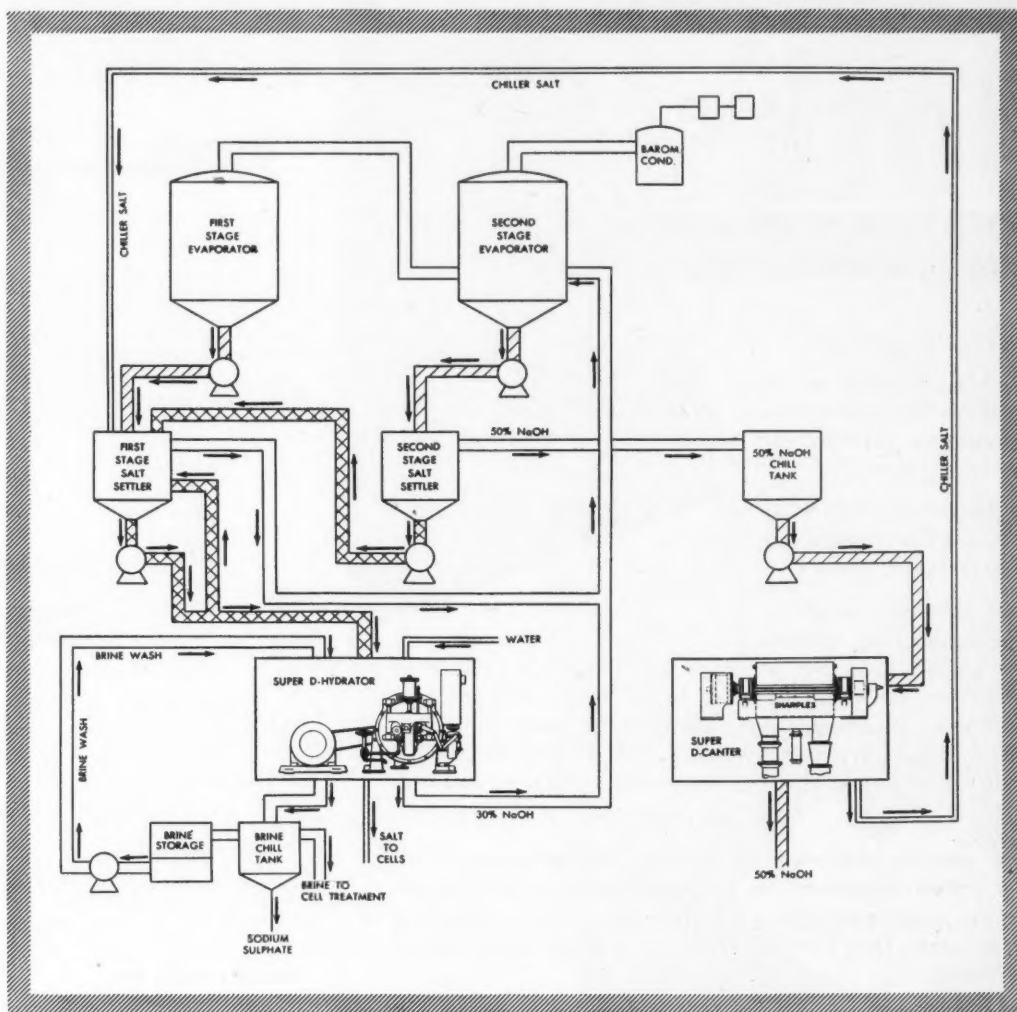
Ratchet type pipe wrench

a new application of centrifugal force

Substantial savings in capital investment and operating costs for producers of electrolytic caustic soda . . . the result of a new Sharples Corporation development which makes use of a heretofore unexploited phenomenon—the solubility of "insoluble" sodium sulphate in brine, in a super gravitational field.

The name Sharples is usually associated with a complete line of centrifuges; however many significant innovations in process engineering emerge from our constant research with industry in the more effective application of centrifugal force.

Sharples' doors are always open . . .



SHARPLES



THE SHARPLES CORPORATION • 2300 WESTMORELAND STREET, PHILADELPHIA 40, PENNA.
NEW YORK • BOSTON • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO • NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON

When inquiring check CP 8353 on handy form, pgs. 2-3

GLASS

Woven entirely from Glass Fibers

Filter

As Chemically Resistant as Chemical Glass Itself

Cloths

Various Degrees of Porosity

Are you filtering or would you like to filter strong acid or oxidizing solutions at high temperatures?

Are your conditions in these respects too severe for other synthetic fibers?

If so, NFM Woven Glass Filter Media may well be your answer. You can purchase our Glass Filter Cloth in rolls ranging in widths from 26" to 64" (100 linear yards or more) and in any length of the standard 38" width which is a stock item. Several different weaves are available, ranging between a dense, tight-filtering surface and a rather porous one.

* * *

If you want the cloth made up into filter element covers, anode bags, collector bags, etc., we are in position to do this at nominal cost... considerably less cost than when they are prepared in your plant. They'll be "all glass", too. We use glass thread for sewing.



Weavers of Industrial Filter Media for over Forty Years

The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill. 2627 West 19th St.	Cincinnati, Ohio Rosalawn Center Bldg.	Houston, Texas 1406 Second National Bank Bldg.	Oslo, Norway Nicolai Friis	Johannesburg, South Africa Edward L. Bateman
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When inquiring check CP 8354 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Controls liquid level of small jobs at 100 psi . . .

small float valve handles about 2.5 gpm at top pressure

Uses: These float valves can be used for liquid level control or to prevent back siphoning where small to medium flows will suffice.

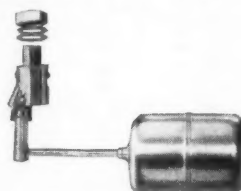
Features: Valves are small and simple in construction — No. 18 valve (shown) is only 8 13/16" overall — yet they are recommended for service up to 100 psi.

Description: Except for the neoprene valve seat, all parts are of copper or brass. Simple construction gives positive closing with little more



No. 18

than 1 1/2" of float motion and allows for disassembly by removal of just one pin. Capacity near the 100 psi pressure limit is about 2.5 gpm, dropping to about 1 gpm at city pressure (30 psi). Both the 18 and 118 valves are used with 1/8" pipe or 1/4" tubing.



No. 118

Right-angle design of the 118 is useful in preventing back siphoning since it cuts off while level is still below the discharge point.

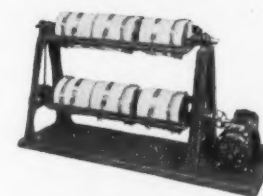
(Offered by McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. . . or for more information check CP 8355 on handy form, pages 2 and 3.)

Details wells for thermocouples

Two-color, 28-page catalog gives details of thermocouple wells. Dimensions, mounting methods and recommended types are shown in photographs and discussed. Extended tables give materials for wells in corrosive service. Catalog 200-1 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Roberts Aves., Philadelphia 44, Pa. When inquiring specify CP 8356 on handy form, pages 2 and 3.

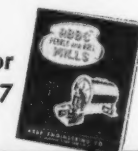
When You Need Grinding and Blending Capacity...

Depend on Abbé-Engineered Mills



For wet or dry grinding, mixing, compounding and pulverizing on all types of raw materials, intermediates and finished products . . . you will find the type and size of mill to meet your needs. Pebble and Ball Mills in 32 sizes for large capacities. Jar Mills for smaller batches from 1 qt. to 60 gal. Jar Rolling Machines for varying size grinding jars.

Write for Catalog 67



ABBÉ ENGINEERING CO. 46 CHURCH STREET
NEW YORK 7, N. Y.

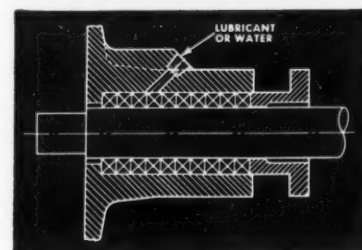
Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 8357 on handy form, pgs. 2-3

TABER for Higher PRACTICAL Performance

LEARN ABOUT

PUMP STUFFING BOXES



BULLETIN S-147 AVAILABLE

The information about stuffing boxes in this bulletin is designed to suggest solution of common stuffing box difficulties in individual pumping operations. • It offers suggestions on such vital matters as number of rings to use, depth of box, and type of packing. • It points out that chemical and physical properties of the liquid, speed of shaft, pressure, and temperatures are governing factors; that reciprocating piston rods are easier to pack than rotating shafts; that extra-deep boxes are not always the most effective; and that new rings should not be added to packing that has lost its resilience. • Much other valuable information is included. • Please use business stationery when writing for this Bulletin S-147.

TABER PUMP CO. (Est. 1859) 320 Elm St., Buffalo 3, N.Y.

TABER PUMPS

When inquiring check CP 8358 on handy form, pgs. 2-3

CHEMICAL PROCESSING

98-99% conc HNO₃, obtainable with plant based on oxidation of NH₃ by pure O₂ . . .

by means of "water film" apparatus, this high conc acid manufactured without admixture of H₂SO₄ acid

Uses: Manufacture of 60% HNO₃ acid for conversion into sodium nitrate, ammonium nitrate, calcium ammonium nitrate and ammonium sulfate. Or, a 98% concentration may be obtained through further oxidation.

Features: A "water film" apparatus to prevent those dangers of explosion that arise when direct oxidation of NH₃ is carried out. This is achieved through insertion of a water film and dilution of the oxidation mixture with steam. For this purpose the waste steam from a heat exchanger is used and with this arrangement, steam cannot be obtained as a by-product. In order to avoid losses by radiation, the steam boiler is mounted directly on the oxidation apparatus.

It is stated that cost of operation of the plant is lower than with conventional plants and that the process is particularly suitable where cheap O₂ is available.

Description: In this improved Fauser process, the oxidation proper takes place on platinum-rhodium contact screens. Oxygen pressure here and in the reoxidation process is 50 kg/sq cm. A condensate trap is connected to the steam boiler, and it separates the added steam and water of oxidation so that only as much steam is present as is necessary to produce concentrated acid.

In a final oxidation unit, the reactant gases are oxidized to N₂O₄ and at the same time, the entrained moisture is eliminated in the form of 60% HNO₃ acid. Liquefaction of the N₂O₄ is carried out, and the resulting material is conveyed to an agitator vessel where in combination with the 60% acid, a crude mixture is formed. From here the reactants go to special autoclaves where reoxidation occurs.

Since there is a certain excess of N₂O₄, the mixture from the autoclaves is freed from gases in a degasifying column through indirect heating with steam, so that a pure acid with a concentration of 98 to 99% is obtained.

For this process 4000 cu m (5230 cu yd) of O₂ with a purity of 97 to 98% are required per metric ton of nitrogen in form of HNO₃.

(Agent for this Nitric Acid Plant manufactured by Bamag-Mequin A.G. is General Industrial Development Corp., Dept. CP, 270 Park Ave., New York 17, N. Y. . . . or for more information check CP 8359 on handy form, pages 2 and 3.)

Complete details on handling and shipping of metallic Na

The safe handling of metallic sodium from 1-lb bricks to 80,000-lb tank cars is completely discussed in this 24-page illustrated booklet. Information pertinent to present plant practices in handling the material. Includes properties and commercial specifications, tables and illustrations covering methods of shipping, and the cleaning of process equipment.

Safety precautions and first aid measures are followed by an appendix which gives the physical and chemical properties of sodium and a bibliography. "Handling Metallic Sodium" is issued by Technical Service Department, National Distillers Chemical Corp., Dept. CP, Ashtabula, Ohio. When inquiring specify CP 8360 on handy form, pages 2 and 3.



Ends Powder Caking for DAVIES-YOUNG

For some time, Davies-Young's detergent, "Dy-Sulph," had been produced in a small way in a ribbon blender. Disadvantages of that method were two-fold: the blender was too small and the blended powder had a tendency to cake. One of their suppliers recommended a **p-k** Twin Shell Blender* as the most satisfactory way of overcoming both difficulties.

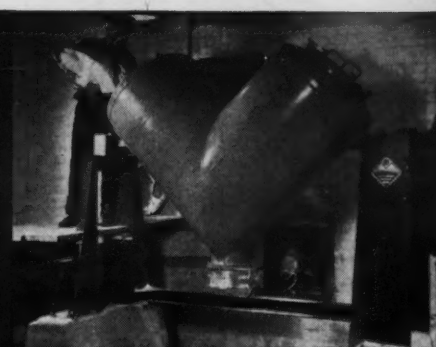
Today, production has been materially increased, the powder is perfectly uniform, with the caking factor eliminated. Cleaning is simplified by the baffle-free design of **p-k** Blenders—loading and unloading time has been reduced. **p-k** Twin Shell Blenders mix dry materials faster and to greater uniformity than any other blender. Production units have a capacity range of from 1 to 250 cubic feet and operate at speeds from 6 to 29 rpm.

You will want to know more about the uniformity and increased production obtainable with **p-k** Twin Shell Blenders—send for catalog 401 on production models and catalog 402 on laboratory models. **p-k** will be pleased to run a test blend of your materials to demonstrate the outstanding merit of this new but service-proved method of dry blending.

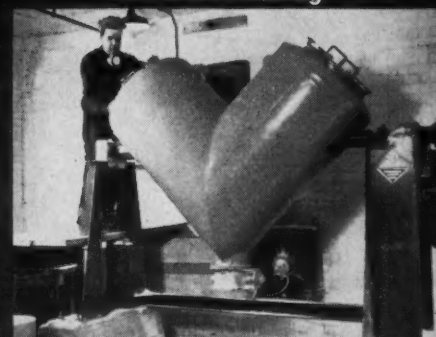
*Patented

the Patterson-Kelley Co. Inc.
23 Lackawanna Ave.
East Stroudsburg, Pennsylvania

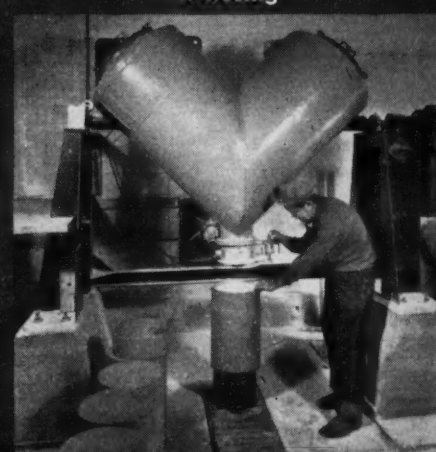
⊗ 1005



Convenient loading



Fast closing



Dustless discharge

Simply Designed
for
Better Blending



When inquiring check CP 8361 on handy form, pgs. 2-3

NEWARK "End-Shāk" TESTING SIEVE SHAKER



Motion is important in making sizing tests. Conforms to recommendations for the motion to be used when making hand tests, issued by the Bureau of Standards.

Here, in the Newark "End-Shāk" unit, you get proper sustained hand motion mechanically. You get the best motion without being subjected to any human variation or weakness. This sturdy testing machine holds up to 7 full height sieves or up to 13 half height sieves. It is designed for 8 inch diameter sieves. Standard 1/2 HP., 110-220 volt 60 cycle, 1750 rpm motor supplied. Special motor to order.

We'll be glad to send you prices and descriptive literature. And if you will outline your testing requirements we'll be glad to suggest the proper sieve series to use.

NEWARK
for ACCURACY

Newark Wire Cloth
COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

Philadelphia 3, Penna. San Francisco, Calif. Chicago, Ill. New Orleans, La. Los Angeles, Calif. Houston, Texas
3211 Widener Bldg. 3100 19th St. 20 N. Wacker Dr. 520 Maritime Bldg. 1400 So. Alameda St. P. O. Box 1970

When inquiring check CP 8362 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

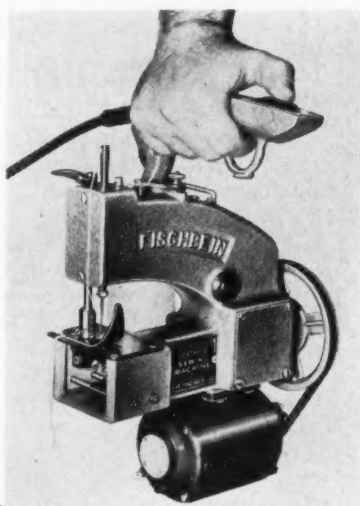
**Light weight of 10 1/2 lb
makes sewing machine
quite portable . . .**

operator holds machine in one hand, material in the other

Uses: Portable electric sewing machine for quick closing of bales, large containers, and other bulky or hard-to-handle packages, replacing hand sewing, etc.

Features: Machine will handle any textile material such as cotton or burlap and paper, as well as specially processed materials of this nature.

Description: Requiring no installation, supports, or plant space, Model CH sewing machine sews



Sews any textile material

about 40 fpm. It is completely portable, weighing 10 1/2 pounds and operating from any 110 volt line — DC or AC, any frequency. Also available is 220 volt motor.

To operate, machine is held in one hand while material is held in the other. Depressing thumb switch in handle starts automatic sewing.

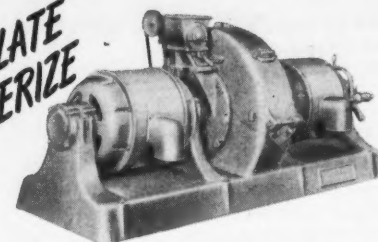
(Product of Dave Fischbein Co., Dept. CP, 38 Glenwood Ave., Minneapolis, Minn. . . . or for more information check CP 8363 on handy form, pages 2 and 3.)

Centrifugal pumps for refinery service

This 12-page bulletin describes manufacturer's type HR and HB, one and two-stage volute, saddle-mounted, vertically split centrifugal pumps. Dimensions and cross-section line drawings are included. Bulletin W-341-B2C is issued on letterhead request to Worthington Pump and Machinery Corp., Dept. CP, Harrison, N. J.

What have you

**to
GRANULATE
or PULVERIZE
?**



Virtually all kinds of reducible materials are being ground, granulated, cracked, shredded, fluffed, or comminuted in Bauer double-revolving-disc attrition mills. The materials include chemicals, grain, wood, seeds, feathers, metals, and many others.

In numerous cases, our engineers have worked out the practical techniques for special processing operations. An essential part of our service is making test runs with commercial sized mills in our research laboratories.

If you have a unique processing problem, we'll try to solve it for you. Perhaps we can cite an existing operation similar to yours in which Bauer Attrition Mills are giving most satisfactory results.

General information on the subject is contained in our Bulletin A-5. Ask for a copy.

THE BAUER BROS. CO. • 1728 Sheridan Ave.
Springfield, Ohio
Established 1878

When inquiring check CP 8364 on handy form, pgs. 2-3

FILTER MEDIA for Chemical Processing



FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.

OTHER "Filpaco" PRODUCTS: Filters, stainless steel storage and mixing tanks, fillers, pumps, conveyors, fittings, and filter aids.

WRITE TODAY for further information and samples!



FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave.

Chicago 16, Ill.

When inquiring check CP 8365 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

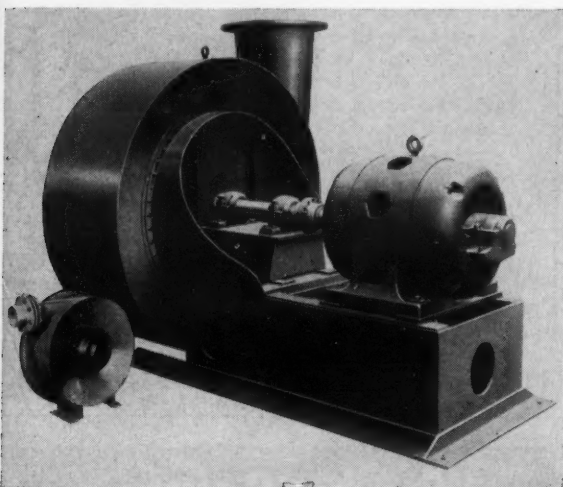
Large capacity blowers have reduced weight and size . . .

design made possible by recently developed steel cutting and continuous welding techniques

Uses: Standard models of fans up to 200 hp. Larger sizes are possible, depending only on available manufacturing space.

Features: Weight and space per hp are reduced to a minimum by improved steel cutting and continuous welding technique used in manufacture.

Description: Three models are currently standard. Operating at 3500 rpm are the Models SG (a multi-stage fan) and SM (a single stage fan). Model ST is designed



Outlet pipe sizes run from 4 to 24 inches

for a 1750 rpm drive. Outlet pipes from 4 to 24" are flange fitted and may be oriented in any one of 14 positions depending on desired discharge angle and offset from fan shaft.

Smaller models, up to 10 hp, are particularly useful for mezzanine or elevated mounting because of their small size.

Although they are designed for air service primarily and thus are all steel construction, these fans can be supplied in appropriate materials to handle corrosive gases. Designs for poisonous or explosive fumes are also available. Delivered pressures up to 3 psig are obtained.

(Maker is Billmyre Blower Div., Lamson Corporation, Dept. CP, Syracuse, N. Y. . . or for more information check CP 8366 on handy form, pages 2 and 3.)

80 gpm at 100-foot head top capacity of pumps

Six-page folder describes fractional-horsepower, package pumps for air conditioning and other applications. They have capacities to 80 gpm at heads to 100 ft. Performance curves are presented, as well as dimensional drawings for the various styles and sizes. Included among the illustrations is a two-page spread of motor and cut-away pump assembly.

Bul 52B7529 is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 8367 on handy form, pages 2 and 3.



Alcoa Heat Exchanger News



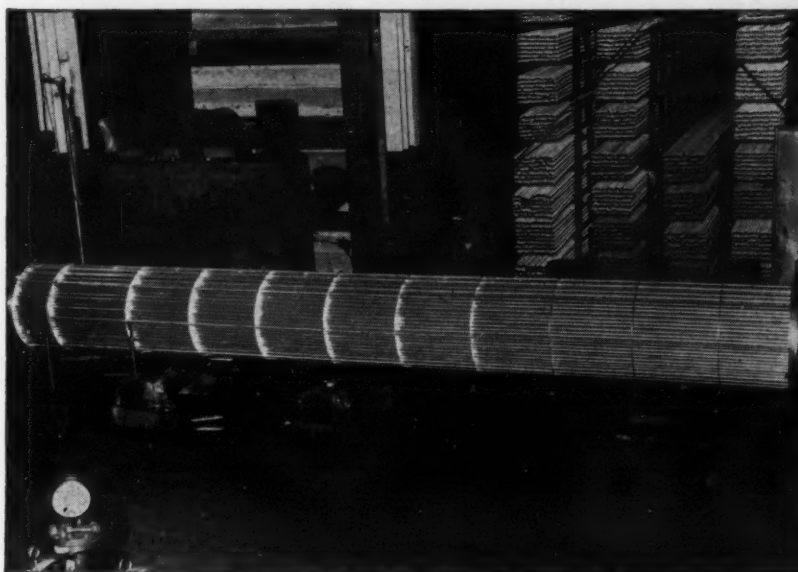
Published by Aluminum Company of America

El Paso Natural Gas Company Saves $\frac{1}{3}$ in Cost of Glycol-Amine Exchanger Tubes

About three years ago, the Fluor Corporation started investigation in corrosion problems occurring with steel exchanger tubes in gas-treating plants utilizing Fluor's glycol-amine process. They conducted extensive research to find suitable replacements for steel. (Results of these tests were reported in the April, 1950, and February, 1951, issues of "Petroleum Refiner" Magazine.) Aluminum and 4-6 cr., $\frac{1}{2}$ moly. steel tubes were most economical of the corrosion-resistant materials tested.

So when Fluor Corporation was selected to engineer glycol-amine exchangers at one of the large new plants of El Paso Natural Gas Company, they recommended Alcoa 3S-H14 aluminum tubes for the service. These tubes cost 30 per cent less than seamless mild steel and 60 per cent less than 4-6 cr., $\frac{1}{2}$ moly. steel. Fabrication of the units was done by Griscom-Russell.

Aluminum heat exchanger tubes have been so successful in resisting corrosion in glycol-amine plant service that over 100,000 pounds of aluminum are now used in that service. Experimental work has indicated over one year of service



with no sign of corrosion. In handling, shipping and fabricating costs, the aluminum tubes saved 200,000 pounds over the heavy metal tubes they replaced. Their greater ductility permits easier roll-in.

ALCOA OFFERS BOOKLET



This 24-page booklet will answer many of your questions about Alcoa Tubes. It covers fabrication techniques, alloy selection, chemical and petroleum applications. It describes tube cleaning, inhibitors, cathodic protection. It contains complete information on fluid flow and heat transfer. There are formulas, tables and specification data. Write for your free copy today. ALUMINUM COMPANY OF AMERICA, 1861M Gulf Bldg., Pittsburgh 19, Penna.

THESE APPLICATIONS ARE NATURAL FOR ALUMINUM TUBES:

Petroleum

Condensers handling hydrocarbon fractions such as gasoline, naphtha, gas, oil, etc.

Vapor recovery condensers

Lube oil coolers

Natural gas compressor after-coolers

TCC overhead condensers

Recompressor aftercoolers

Hydrogen sulfide gas coolers

Furfural condensers and heat exchangers

Propane chilling

Wax sweaters

Lean oil—rich oil exchangers

Amine solution coolers

Glycol-amine solution coolers and heat exchangers.

Chemical

Butanol

Ethanol

Ethylene Glycol

Glycerin

Hydrobietyl

Isopropanol

Methanol

Phenol

Propylene Glycol

Acetaldehyde

Formaldehyde

Furfural

Heptaldehyde

Acetic acid

Butyric acid

Stearic, Palmitic, Maleic Oleic acids

Naphtha

Ricinoleic acid

Acetanilide

Ammonia

Hydrogen Cyanide

Nitric acid (concentrated)

Pyridine

Hydrogen Sulfide

Benzene

Dichlorobenzene

Gasoline

Gelatin

Hydrogen Peroxide

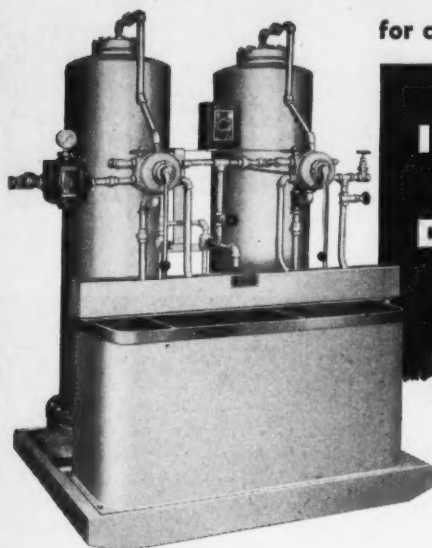
Turpentine

Xylene

When inquiring check CP 8368 on handy form, pgs. 2-3

PURE WATER *at Low Cost*

for chemical processes

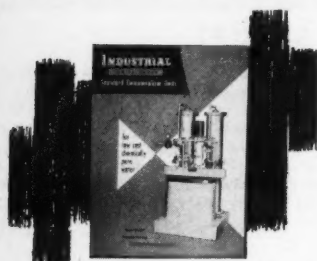


INDUSTRIAL ION-EXCHANGE Demineralizers

A two-bed INDUSTRIAL demineralizer unit. Standard units are available with capacities of 200 to 1000 gph. Special units of any capacity are engineered to requirements.

Since chemically pure water costs so little with an INDUSTRIAL demineralizer, there is no reason for not having the benefits of demineralized water. It simplifies product-quality control in so many processing operations.

The equipment required is very simple—no heat, steam, or cooling water is used. Units can be made to deliver almost any quantity of purified water. The operation is practically automatic—requiring only limited attention periodically.



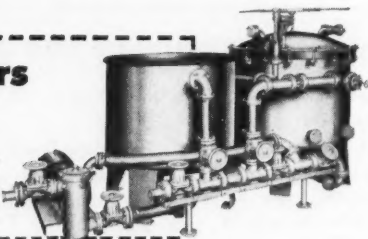
Ask for Bulletin 200

This bulletin gives the details on INDUSTRIAL demineralizers with specifications and performance data on the standard models. If you want information on a particular problem, send us a water analysis, degree of purity required, amount in gallons per hour, and whether the flow is to be continuous.

INDUSTRIAL Filters

For Solution Clarification
Any Solution—Any Quantity

A typical INDUSTRIAL stationary filter. Standard portable and stationary models are available with capacities 100 to 15,000 gph. Special filtering systems are engineered to meet unusual requirements.



Write for full information and recommendations

INDUSTRIAL FILTER & PUMP MFG. CO.

5908 Ogden Avenue
Chicago 50, Illinois

FILTERS •	PUMPS	CORROSION TESTING APPARATUS
Pressure Type	Centrifugal	Salt Fog • Humidity
RUBBER DIVISION		
Vulcanized Linings	Molded Products	WATER
		DEMINERALIZERS

When inquiring check CP 8369 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Offers close control
in pumping cc/hr
in the lab . . .**

rate independent of changes in vapor or input pressure, viscosity

Uses: In laboratory or production control, development or pilot plant work where flows under 800 cc/hr must be handled with accuracy.

Features: Flow rate may be adjusted and controlled. Totalizer indicates delivered quantity to 0.1 or 0.01 cc. Flow rate does not change with variations in input or output pressure, vapor pressure, or viscosity.

Description: Micro Feeder consists of a measuring cylinder mounted horizontally in a cast iron frame and fastened to a steel base plate. Pumping plunger is coupled to a feed screw and driven through a gear reduction and variable speed drive. Minor changes in rate are controlled directly with handwheel, while large changes in capacity are made by changing the gears.

Two models are available. Type 20 has a cylinder charge capacity of 800 cc which may be discharged in from 1 to 100 hours at pressures up to 175 psig. Type 07, with a cylinder charge capacity of 100 cc and may be discharged as type 20 except that maximum discharge pressure can be as high as 2000 psi. Comparative rates, then, are 8.0 min and 800 max cc/hr for the Type 20; 1.0 min and 100 max for Type 07. Accuracy of 1/4 of 1% can be obtained.

(Development of % Proportioners, Inc. %, Dept. CP, P.O. Box 1442, Providence 1, R. I. . . or for more information check CP 8370 on handy form, pages 2 and 3.)

Details of panel instruments

Graphic panel strip-chart recorders are explained in six-page, three-color, fold-out bulletin. These pneumatic instruments are accurate to within 1% of full scale and carry a 30-day chart supply. Bulletin emphasises the fact that controls and adjustments are concentrated at the front or panel side of the recorder.

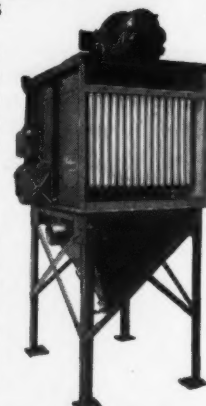
Photographs of several views are shown as well as engineering drawings. Operation and detailed specifications are included. Specification Sheet 769 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8371 on handy form, pages 2 & 3



STOP DUST AT ITS SOURCE

... with Pangborn Unit Dust Collectors

If concentrated dust hampers your production, install this Pangborn "CL" industrial type Unit Dust Collector right at the source of dust! It's delivered factory assembled, ready to use. Has non-sag, individually removable screen frames, motor-driven screen shaker—all-metal construction (except filter cloths). Models available with cloth area from 180 to 820 sq. ft. Write for Bulletin 912 to: PANGBORN CORPORATION, 2700 Pangborn Blvd., Hagerstown, Maryland.



Look to Pangborn for the latest developments in Dust Control and Blast Cleaning equipment.

Type "CL" Collector with side removed, showing bank of screens.

Pangborn

DUST CONTROL
stops the dust hog from stealing profits

When inquiring check CP 8372 on handy form, pgs. 2-3

you save 50% in TANK HEATING and COOLING with PLATECOIL



- ★ You SAVE 50% in tank SPACE
- ★ You SAVE up to 50% in initial COST
- ★ You have 50% LESS WEIGHT to handle
- ★ You SAVE 50% in maintenance LABOR as plates are changed from outside the tank without dumping solution

... besides all these you get faster heating or cooling. Take advantage of the engineering assistance offered by Kold-Hold to help you with your heat transfer problems.

Send for complete technical manual and descriptive Bulletin No. P54.

PLATECOIL
KOLD-HOLD MFG. CO.
LANSING & MICHIGAN

When inquiring check CP 8373 on handy form, pgs. 2-3

CHEMICAL PROCESSING

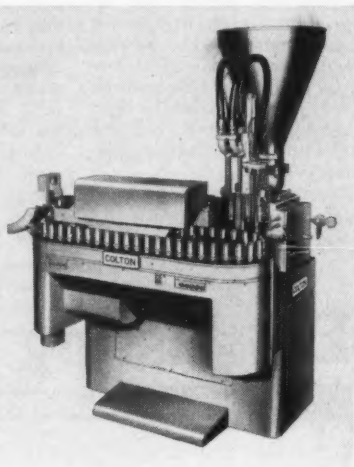
PROCESSING EQUIPMENT

Filled, closed tubes are clean, don't have to be wiped before packing . . .

filler and closer is simple to operate, maintain and change over from one tube size to another

Uses: Fills tubes and closes them. Single-filling model handles tubes from 1/2 to 1-3/4" diam by 7 1/2" long; twin-filling model handles tubes to 1 1/4" diam by 7" long. Pastes, creams, liquids or powders can be handled.

Features: Entire operation is reported to be so clean that it is unnecessary to wipe filled and closed tubes before packing. All parts of machine are readily accessible for cleaning, adjustment and change-over to different size tubes. Operation is safe, simple and well within ability of average operator.



Tube filler and closer

Description: Tubes are placed in vertical tube holders and move to filling head where they are filled from bottom up to prevent air pockets. Fill is exactly metered, delivered by gravity feed from 15-gal hopper. Filled tubes pass to closing and crimping stations which produce quadruple-fold clipless closure. Code marking jaws are supplied on request.

Capacity of standard single-filling model is 55 tubes per minute; capacity of standard twin-filling model is 85 tubes per minute. Each is powered by 1 1/2 hp motor. Special models are available.

Optional equipment available includes tube-cleaning equipment which cleans tube by air-vacuum, cap-tightening equipment, "no-tube-no-fill" attachment, agitator for feed hopper, and adjustable-temperature hopper heater.

(The No. 180 automatic tube filler and closer is a product of Arthur Colton Company, Dept. CP, 2608 E. Jefferson Ave., Detroit 7, Mich. . . . or for more information check CP 8374 on handy form, pages 2 and 3.)

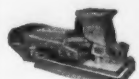
Practical, theoretical aspects of metallizing

The 250 pages of text cover practical as well as technical aspects of metallizing. Profusely illustrated with photographs, diagrams and charts, the book delves into various methods of surface preparation and the application of metallized coatings for machine element work, corrosion work, and for many special production jobs. Miscellaneous applications discussed include repair of blow-holes in casting, brazing and soldering, glass and ceramics, mass coatings in tumbling barrels, electric circuits, and model work.

For copy of "Metallizing Handbook," remit \$3.00 direct to Metallizing Engineering Co., Inc., Dept. CP, 38-14 30th St., Long Island City 1, N. Y. Or, when inquiring specify CP 8375 on handy form, pages 2 and 3.



FEED



WEIGH AND FEED



CONVEY



PACK



COOL



DRY



SCREEN



COOLING OR DRYING

CUSTOM-BUILT SYSTEMS Engineered to meet your need

It looks BIG . . . is BIG . . . does a BIG job.

It's the Jeffrey-Traylor Dryer for granular materials. Made in standard-unit lengths, each independently powered.

Sections can be arranged in exactly right combination for any operation—and they work together. Conveying action

by electric vibration. No contamination of material—no breakage—no loss of color or luster. Specially valuable for processing under closely-controlled conditions. Can be used for cooling as well as drying. Catalog No. 804 tells all. Send for it.

Jeffrey-Traylor Direct-type DRYER—furnished with either perforated or louvered conveying surface through which drying or cooling air or gases are passed. As solid material is conveyed over surface, each particle is continuously and completely surrounded with a stream of air or gas of correct temperature and condition.

THE JEFFREY

MANUFACTURING COMPANY

ESTABLISHED 1877
856 North Fourth St., Columbus 16, Ohio

Baltimore 2 Boston 16 Cincinnati 2 Detroit 13 Houston 2 New York 7 St. Louis 1

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Birmingham 3 Chicago 1 Denver 2 Harlan, Ky. Milwaukee 2 Pittsburgh 22

Jeffrey Mfg. Co. Ltd., Montreal, Canada The Gallon Iron Works & Mfg. Co., Gallon and Bucyrus, Ohio

British Jeffrey-Diamond Ltd., Wakefield, England Gallon (Great Britain Ltd.), Wakefield, England

Jeffrey-Gallon (Pty.) Ltd., Johannesburg, S. A. The Ohio Malleable Iron Co., Columbus, Ohio

The Williams & Jones Mfg. Co., Columbus, Ohio

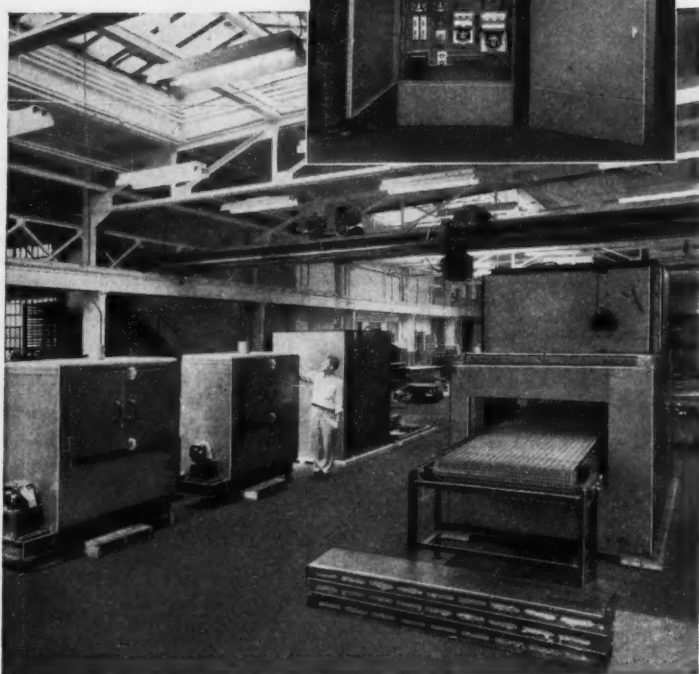
Complete Line of
Material Handling,
Processing and
Mining Equipment

When inquiring check CP 8376 on handy form, pgs. 2-3

KIRK AND BLUM INDUSTRIAL OVENS

Ready To Go!

Typical Kirk & Blum
Oven Control



Many KIRK & BLUM Industrial Ovens, although designed and built to specifications, are shipped completely assembled and tested, ready to operate. Once "spotted" in your plant, they can be connected and in operation in a few hours, saving time and expense.

Illustrated above is a representative group recently shipped to well known industrial firms. From left to right: Two moisture evaporation ovens for chemical powders. Moisture removal oven for carbon electrodes. A conveyerized oven for drying insulating varnishes.

**INDUSTRIAL OVENS • FAN SYSTEMS FOR VARIOUS INDUSTRIES
DUST COLLECTING SYSTEMS IN METAL INDUSTRIES**

For information or literature on any of these KIRK & BLUM products write

KIRK AND BLUM

THE KIRK & BLUM MFG. CO.
3133 Forder Street
Cincinnati 9, Ohio

When inquiring check CP 8377 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

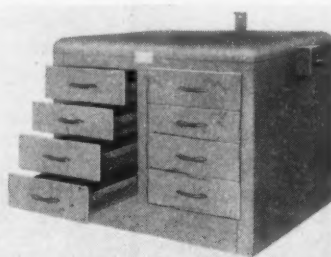
**Staggered drying schedule
run in the 8 drawers
of mobile oven . . .**

heating is by forced air circulation
over strip heaters

Uses: For pre-heating, drying, or
baking parts or materials.

Features: Oven has 8 drawers that
permit baking of different materials at
the same time or materials inserted at
intervals.

Description: Oven weighs 118 lb
and stands 2' high. Temp control is
by thermostat, adjustable to 325°F.
Heating is by forced air circulation over



Eight drawers permit staggered
drying schedule

strip heaters made of powdered magnesia compressed around a Nichrome coil. Oven draws 2000 watts, 110 volts.

Adjustable damper controls volume of air circulation. Stale air is forced out through ports. Accessories available include outside-reading thermometer, timer, pilot light, and exhaust chamber adapter for venting off fumes.

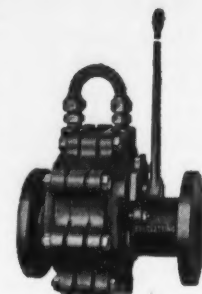
(Model TD electric oven is a product of Grieve-Hendry Co., Inc., Dept. CP, 1101 N. Paulina St., Chicago 22, Ill. . . or for more information check CP 8378 on handy form, pages 2 and 3.)

Design tips on welding studs to steel

This concise 8-page manual details the advantages of this method of fastening studs to steel by welding. The elimination of drilling and tapping, greater freedom in the placing of attachments, and increased production are some results cited.

In addition to listing stud specifications and recommended stud selection guides, the manual presents detailed suggestions concerning template design and provisions for accommodating fillet. "How to Design for Welding" is issued by Nelson Stud Welding Division, Gregory Industries, Inc., Dept. CP, Lorain, Ohio. When inquiring specify CP 8379 on handy form, pages 2 and 3.

Valves That Keep VISCOUS MATERIALS Flowing Freely



When you handle coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures, you won't be troubled with clogged valves if you use EVERLASTING Steam Jacketed Valves.

The ample jacket space of these valves surrounds the ports as well as the body . . .

provides extensive heating surface and correct temperature to insure fluidity. Besides, the design of the valves is quick acting . . . non-wedging . . . and self-grinding . . . and they have the straight-through flow and lasting tightness that have made EVERLASTING Valves famous for over 40 years. Write for complete information.

EVERLASTING VALVE CO., 49 Fisk Street, Jersey City 5, N. J.

Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

EV-344A

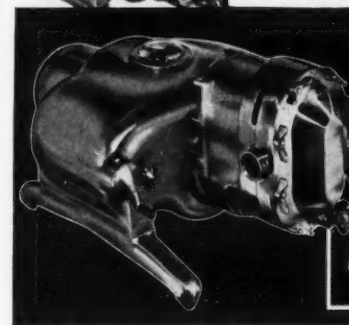
Everlasting Valves

for everlasting protection

When inquiring check CP 8380 on handy form, pgs. 2-3



Reduce Your Pump
Equipment Costs...



Standardize on
New Waukesha
SHIFTSPEED
Units

ONE SHIFTSPEED
Unit Serves ALL
Pumps and ALL
Motors including
5 H.P.

Here's another big PLUS dollar-saving advantage you get when you specify a Waukesha SHIFTSPEED Pump. ONE size SHIFTSPEED unit can be used for all sizes of pumps and all motors up to and including 5 hp. This new, revolutionary variable speed drive unit, pioneered by Waukesha, has many new features. It adds "Automatic Gear Shift" convenience to the pump industry. Capacity changes can be made while pump is operating by just turning the hand-wheel, and watching the Dial on the housing for required pump speed. No belt-and-sheave changes — no stopping or interrupting your product flow. No belt stretch, no belt slipping. Standard timing belt provides long-lasting positive power delivery at all speeds. Write for descriptive folder and prices.

*P.D.—Positive Displacement for smooth flow.

WAUKESHA
FOUNDRY
CO.

Waukesha, Wisconsin

100%
SANITARY
PUMPS

Dependable Product of a Responsible Manufacturer

When inquiring check CP 8381 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Design of continuous grinding mill meant for severe duty . . .

lining of strongly constructed ball or tube equipment can be replaced easily

Uses: For grinding chemical raw materials, ceramic raw materials, minerals, and numerous finished products. Mill is adaptable to fine or coarse, wet or dry, open or closed circuit grinding.

Features: Design is intended for heavy-duty operation, and will perform satisfactorily under the most severe conditions without excessive maintenance, according to the manufacturer.

Description: Continuous ball or tube mill may be used to deliver a finished product, or may be operated in conjunction with classifying equipment. Hollow trunions are provided for continuous charge and discharge. Sizes range from 2' diam by 2' long, to 10' diam by 24' long.

Replaceable cast steel mill heads, slightly conical for strength, are bolted onto a flange ring on mill shell. Shoulder and matching recess assure perfect alignment. Shoulder carries the load, relieving the bolts of most of the strain.

The welded steel shell is drilled for installation of the replaceable cast alloy iron or steel lining. Where materials must be ground with a minimum of metallic contamination,

mill may be lined with buhrstone or acid-resistant Porox blocks. A large manhole makes it easy to replace linings.

Mill is driven through a heavy T-section girth, or ring gear, split and reversible. Using a full-depth, 20°-pressure-angle involute tooth form, gear is said to provide maximum allowance for wear and tooth strength. Main gear meshes with forged-steel cut-tooth pinion mounted between heavy-duty countershaft bearings.

Main mill bearings can be made in various designs, such as heavy-duty babbitt, replaceable bronze sleeve, or fabric-plastic sleeve. Oil circulating system lubricates bearing prior to starting, thereby reducing starting torque. Combination water-cooling and lubricating system is used with the plastic sleeve type bearing.

(Continuous Ball and Tube Mill is made by Patterson Foundry & Machine Company, Dept. CP, East Liverpool, Ohio . . . or for more information check CP 8382 on handy form, pages 2 and 3.)

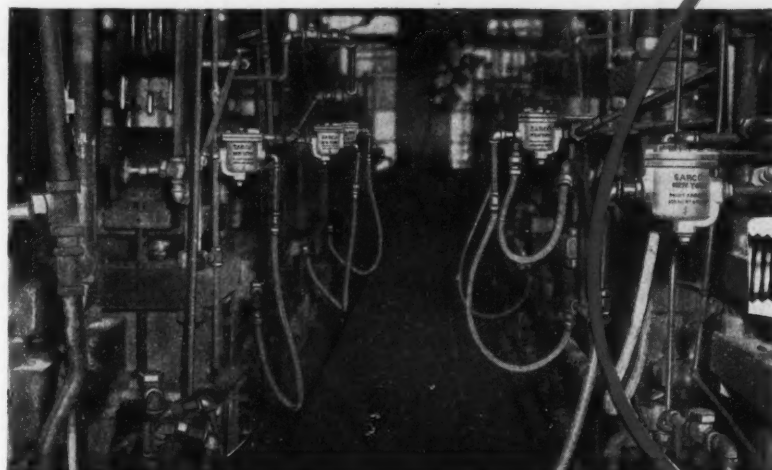
Covers gas welding and cutting equipment

Complete information is presented on manufacturer's line of gas welding and cutting equipment in this 63-page, multi-colored catalog. Torches, nozzles, tips, pressure gauges, operation data charts, roller guide for hand cutting, pneumatic controls, flowmeters, etc., are all detailed. Catalog 20C is issued by Victor Equipment Co., Dept. CP, 844 Folsom St., San Francisco 7, Calif. When inquiring specify CP 8383 on handy form, pages 2 and 3.

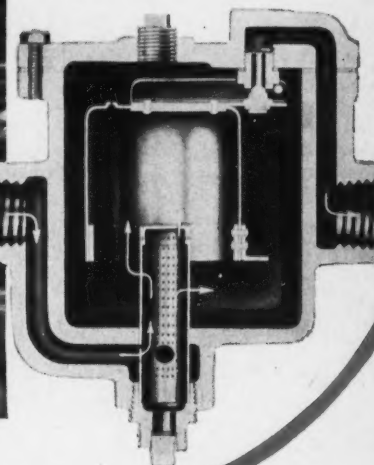
DECEMBER, 1951

five million TRAP DAYS

of Satisfactory
Operation with



A few of the 100 Sarco Bucket Traps in this Plastics Plant



Here's a "test" to end all tests as far as steam traps go. More than 100 Sarco Bucket Traps in operation 24 hours a day most of the time for more than 15 years! As the manager of this plastics plant puts it "They are tops in satisfaction—what more can I say." And the mechanic who put them in and has had charge of the steam service for 22 years, says "Sarco ended our trapping problems 15 years ago."

IT COSTS LESS TO BE RIGHT — The invariable result of adding Sarco Steam Traps and Temperature Controls to improve production is a *saving in fuel costs*. Heat where you

want it, when you want it — never too much — or too little or too late. To be right the first time see Sarco first.



SARCO BUCKET STEAM TRAPS

SARCO Bucket Steam Trap clears condensate instantly. And it costs less to install because of the built-in strainer (at no extra cost) and the straight-thru connection which saves piping materials, time and labor. Ask for Catalog No. 350.

310

SARCO

SAVES STEAM

SARCO COMPANY, INC.

Represented in Principal Cities

Empire State Building, New York 1, N. Y.

SARCO CANADA, LTD., TORONTO 5, ONTARIO

IMPROVES PRODUCT QUALITY AND OUTPUT

When inquiring check CP 8384 on handy form, pgs. 2-3

for HEAVY mixing MODEL TA



AGITATOR
PARTS
QUICKLY
REMOVABLE
FOR EASY
CLEANING

agitator
kettle

GROEN

STAINLESS STEEL
STEAM JACKETED
TWIN-SHAFT
MIXER KETTLE

ASK US ABOUT
THE HIGH SPEED
ROTA-THERM
JACKET

Attains fastest cooking speed ever produced by any kettle! Multiple steam inlet design develops high velocity steam circulation instantly. No air pockets... no cool areas, possible. Gives all advantages of stainless steel plus swift operation. Ask for Bulletin RT-1.

FAMOUS FOR ITS SANITARY EFFICIENCY

- Stainless steel from top to bottom. Completely sanitary—conforms to the most rigid Health Dept. requirements. Twin shaft operation for highest efficiency in mixing. Fully enclosed motor drives two shafts: (1)—at slow speed operating extra large shovel type scrapers; and (2)—a secondary high-speed shaft equipped with any of a variety of beaters, blenders or mixers.

- Demountable shaft couplings permit entire agitator assembly to be removed in a few seconds for easy cleaning, and as quickly reinstalled. Cannot disengage in operation. And couplings equal strength of a solid shaft. Read all about this widely famous mixer in Bulletin TAK-2. Write for it now.

GROEN MFG. CO.

4533 W. Armitage Ave., CHICAGO 39, ILL.

30 CHURCH ST.
NEW YORK 7

(HALF A CENTURY
OF FINE KETTLES)

420 MARKET ST.
SAN FRANCISCO 11

When inquiring check CP 8385 on handy form, pgs. 2-3

Processing Equipment

Sift-proof Bag Closures Are Formed by Semi-automatic Heat Sealer, Gluer

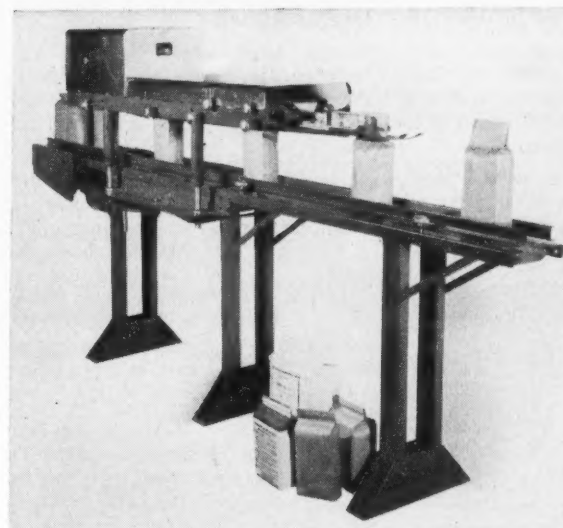
Unit double-folds, heat seals inside of bag, and glues second fold to first; closure stops water vapor

USES: For closing automatic, square or flat bag whose surface will allow gluing and the inside of which is heat sealable, such as Thermoseal top, pliofilm or polyethylene lined or coated. Handles pack heights from 7 to 15 3/4" (total length of bag should be sufficient to allow for one-half the tuck or gusset plus 3 1/2" above pack height), and depths up to 5 1/2". There is no limitation on width. Recommended for use with manufacturer's Duo-Tite bag.

Features: Machine produces neat closure that is sift-proof and strong. This type of closure also is said to be excellent for water-vapor protection where hygroscopic products are packaged in paper bags using water-vapor-proof liner. Machine is semi-automatic. Bags are tucked by hand on lead-in conveyor, but everything else is done automatically by machine.

Description: The Fry Model CSG Heat Sealer and Gluer double-folds, heat seals inside of bag, and glues second fold to first fold. Bags leaving machine may be put in shipping containers right away. Floor space required is 10 x 1 1/2'.

Speed of machine is determined only by the number of bags that may be tucked by hand on the conveyor traveling at 20 fpm.



Semi-automatic bag closer for producing sift-proof closure

Temperature control range on heat sealer provides continuous range to 550°F. Adhesive is cold. Glue pot is easily removed for cleaning with water.

(Manufacturer is Benj. C. Betner Co., Dept. CP, Devon, Pa. . . . or for more information check CP 8386 on handy form, pages 2 and 3.)

Valves in 22-page bulletin are for boiler service

Twenty-two-page bulletin covers boiler service valves for water column connections, surface blow, bottom blow-off, water column blow-off, and emergency oil shut-off. Literature describes quick-opening and slow-opening straightway valves, angle valves, Y valves, and duplex blow-off units, with complete specifications, materials of construction and dimensions of each type. Illustrations include details of design, sectional and exploded views, and explanations of operation. One section describes valves for fire protection.

Bul E125 is issued by Dept. 77, Everlasting Valve Company, Dept. CP, 49 Fisk St., Jersey City 5, N. J. When inquiring specify CP 8387 on handy form, pages 2 & 3.

Eases selection of jet pumps

Manufacturer's jet pumps are given "full treatment" in 20-page bulletin. Capacities, steam and air consumption, dimensions and pipe connections are shown in tabular form. Necessary sectional and dimensional drawings are provided. One section deals with installation, operation and maintenance of the pumps; includes drawings of six typical arrangements. Special jet pumps are illustrated. A full page is devoted to listing of a wide variety of representative uses.

Bul 512 is issued by Penberthy Injector Company, Division of The Buffalo-Eclipse Corporation, Dept. CP, 1242 Holden Ave., Detroit 2, Mich. When inquiring specify CP 8388 on handy form, pages 2 and 3.

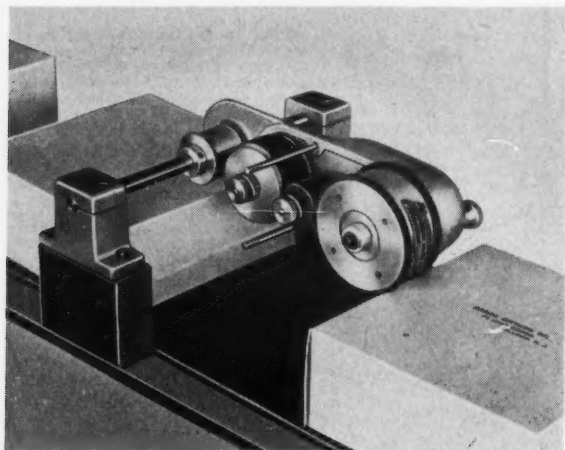
**Imprints made by machine
are accurately located . . .**

interchangeable rubber type will not slip; twin-roll inking system assures clear print

Uses: Friction-powered imprinting machine produces spot-registered imprints of code dates, weights, sizes, etc., on small cartons, cans, canisters and bottles.

Features: Metalok type holder holds interchangeable rubber type securely in place so it will not slip during imprinting. Twin-roll inking system transfers thin film of ink to type face, and is said to prevent over-inking and under-inking.

Description: The Rolacoder #401 imprints legends containing four lines of copy, occupying maximum depth of 1" and maximum length of 5", on top or side of cartons



Imprinting machine set up to mark top of boxes. Unit can be installed vertically to mark sides if desired

as they pass through a cartoner or sealer, or along a conveyor. It is reported to make a single accurately located imprint in any designated spot on cartons whose imprint side measures between 1 3/4" and 6 3/4" in the dimension parallel to direction of package travel.

Normally, the device is preset at the factory for cartons of a specific size but, when desired, may be obtained with interchangeable cams that permit user to modify machine action at will in order to imprint cartons of various sizes within the unit's maximum-minimum range. It is also furnished with appropriate mounts for installation in either a horizontal or vertical position to imprint from top or side of the line. Machine is easy to install.

The Metalok type holder consists of a series of concentric metal rings which open by a turn of a key to accept or release type when copy changes are necessary. Rings are locked tight by the same key.

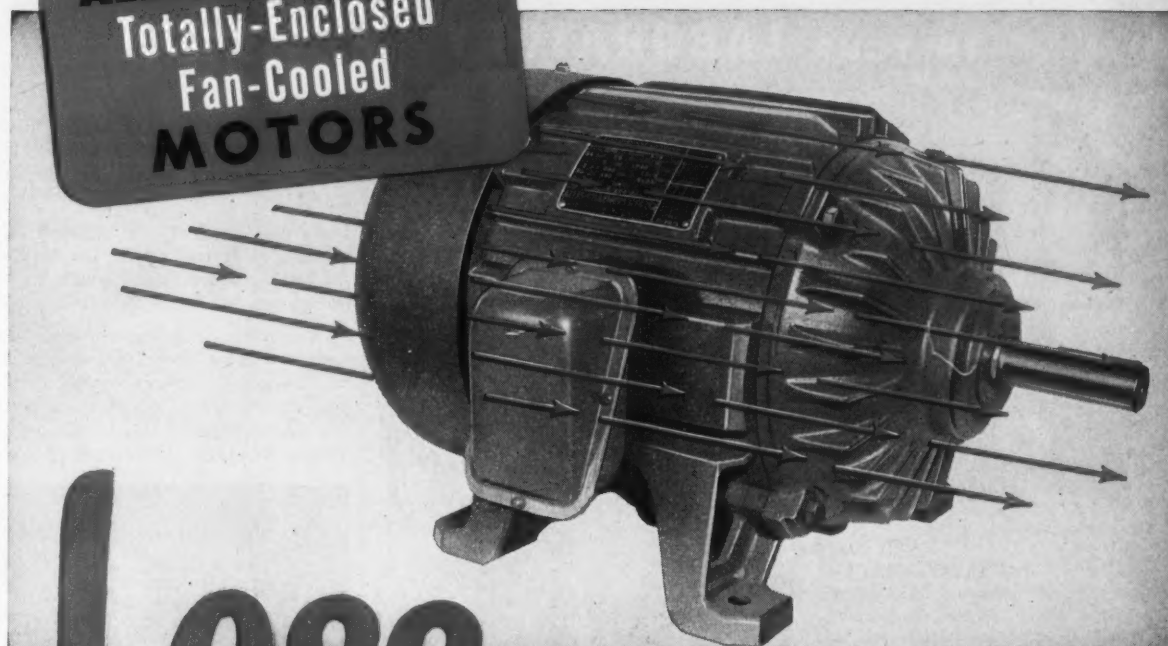
(Product of Adolph Gottscho, Inc., Dept. CP, Hillside 5, N.J. . . or for more information check CP 8389 on handy form, pages 2 and 3.)

**Indexes line of fastenings
for quick reference**

Containing 56 pages, this publication covers manufacturer's complete line of non-ferrous and stainless steel fastenings. An index page lists all fastenings by alloy and type for quick, easy reference. Brass, bronze, copper, Monel and aluminum are some materials of construction. "Harper Fastening Guide" is issued by The H. M. Harper Co., Dept. CP, 8200 Lehigh Rd., Morton Grove, Ill. When inquiring specify CP 8390 on handy form, pages 2 and 3.

DECEMBER, 1951

**ALLIS-CHALMERS
Totally-Enclosed
Fan-Cooled
MOTORS**



**Less MOTOR CLEANING
... INSPECTION ... OVERHAUL!**

HERE'S A MOTOR that actually blows itself clean! Dirt is carried away by cooling air blown over the ribbed cast iron frame and bearing housings of this new Allis-Chalmers tefc motor.

Dirt can't build up to cause overheating. Concealed air passages and pockets have been eliminated. Even oily dirt that sticks can simply be wiped or blown off.

And this means savings! Maintenance costs are traditionally low on totally-enclosed, fan-cooled motors. But they're lower than ever before on the new Allis-Chalmers Type APZ tefc motor.

Rigid Construction

The frame is cast iron which has high

resistance against corrosion and distortion. Bearings are pre-lubricated at the factory and should need no attention for years. Tapped holes with pipe plugs to permit regreasing and to provide grease relief are standard equipment.

Get All The Facts

The new Allis-Chalmers Type APZ totally-enclosed, fan-cooled motor is built in all NEMA standard frame sizes from 224* to 505. Also in explosion-proof type. Your A-C Authorized Distributor or District Office has complete information. Call today, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.

A-3426

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS



When inquiring check CP 8391 on handy form, pgs. 2-3

Sold . . .

Applied . . .

Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.



CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

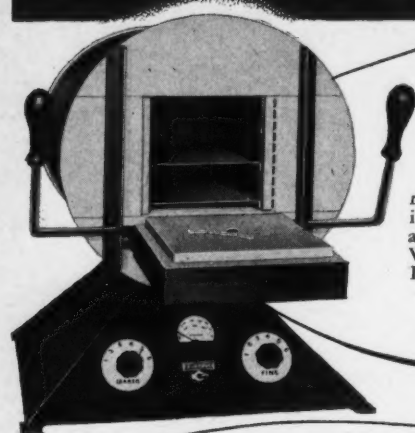
TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.



PUMPS — Integral motor and coupled types from 3/4 in. to 72 in. discharge and up.

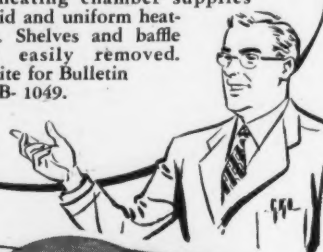
*Similar design non-ventilated motors Type APK, also available in frames 203 to 224 inclusive.

3 GOOD TECHNICIANS IN YOUR LABORATORY



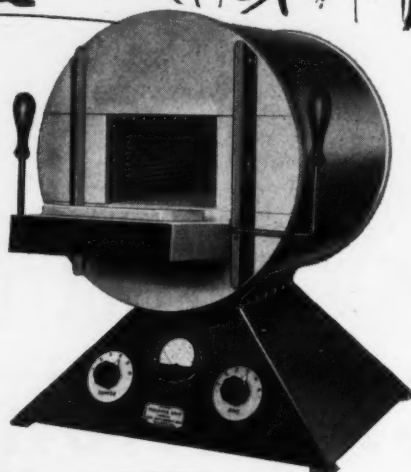
"MULTIPLE UNIT" TEMPERING FURNACE

For Temperatures to 1250° F.
A high speed centrifugal fan located in the rear of the heating chamber supplies rapid and uniform heating. Shelves and baffle are easily removed. Write for Bulletin LAB- 1049.



"MULTIPLE UNIT" MUFFLE FURNACE

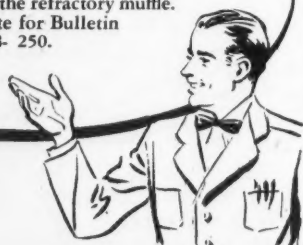
For Temperatures to 1850° F.
For drying precipitates, ash determinations, fusions, ignitions, heating metals and alloys, enameling, heat treating, and experimental test work. Available in four standard sizes. Write for Bulletin LAB-849.



HEVI DUTY "G-05-PT" FURNACE

For Temperatures to 2600° F.

Designed for operation at high temperature with or without a protective atmosphere. Heating elements are silicon carbide rods extending across the chamber, above and below the refractory muffle. Write for Bulletin LAB- 250.



HEVI DUTY ELECTRIC COMPANY

LABORATORY FURNACES **MULTIPLE UNIT** ELECTRIC EXCLUSIVELY

MILWAUKEE 1, WISCONSIN

When inquiring check CP 8392 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

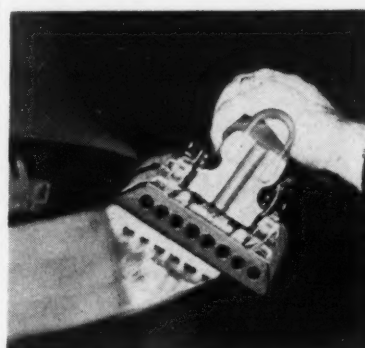
Finish welded seams without swirls or pressure marks . . .

sander quickly conditions metal for painting

Uses: For finishing of welded seams and removing scratches and defects without leaving swirls or pressure marks.

Features: Seam is grained and blended in perfectly after assembly, an important consideration where an extra-smooth surface is required.

Description: Straight-in-line action with speeds of over 3000 revolutions per minute. Abrasive-sheet size is 3-2/3 x 9 (1/3 of a standard sheet). A counter-balanced pad eliminates fatiguing vibration. Has built-in water



Straight-line action sander

attachment for wet sanding when desired. In addition to single-pad models, double-pad units are available for speedy work and sanding large areas. Large model speeds are up to 1100 oscillations per minute.

(Welding seam sanders are made by Sundstrand Machine Tool Co., Dept. CP, Rockford, Ill. . . . or for more information check CP 8393 on handy form, pages 2 and 3.)

Lab methods given for Cu, Hg, Zn

Fifteen mimeographed sheets, punched for notebook, give four methods of analysis which can be carried out in the average lab. Tests were designed to check amount of anti-mildew materials added to fabric. Copper by a volumetric (iodimetry) or electrolytic method, mercury by a volumetric method, and zinc by a gravimetric method are explained. Each procedure is drawn up for ease and accuracy of handling treated fabrics.

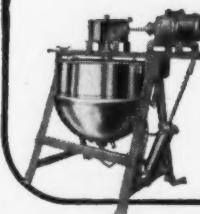
These Data Service Sheets are issued by Nuodex Products Company, Inc., Dept. CP, Elizabeth F, N. J. When inquiring specify CP 8394 on handy form, pages 2 and 3.

For Safety
in DUMPING or CLEANING

LEE HYDRAULIC OPERATING CYLINDERS



**Operated Directly From Your Present Water System
No New Lines Are Required!**



All Lee Tilting Kettles and Agitators are available with Hydraulic Operating Cylinders to eliminate the dangers—such as scalding of the operator, loss of product or damaged equipment—caused by the ever-changing center of gravity when tilting. The smooth action of this cylinder permits perfect control and balance for safe pouring or cleaning of Lee corrosion-resistant kettles.

Our descriptive bulletins on these units will be of interest to you.

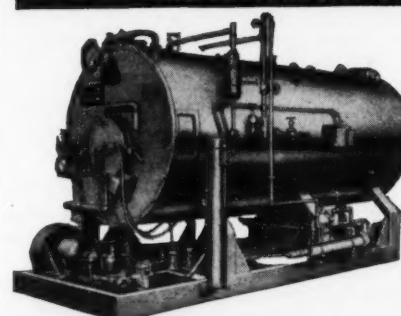
LEE

METAL PRODUCTS CO., INC.
418 PINE STREET • PHILIPSBURG, PA.

ALL LEE KETTLES ARE
MADE TO A.S.M.E. CODE

When inquiring check CP 8395 on handy form, pgs. 2-3

MODERNIZE with the AMESTEAM GENERATOR



HERE
ARE THE
FACTS!

• COMPLETE • COMPACT
• ACCESSIBLE • EFFICIENT
• AUTOMATIC

10 to 500 h. p. —
15 to 200 lbs.

WRITE FOR
YOUR COPY

AMES IRON WORKS

BOX 612 OSWEGO, N. Y.

Builders of Better Boilers since 1848
Manufactured under
License in Canada by VOLCANO, Ltd., Montreal, P. Q.

When inquiring check CP 8396 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

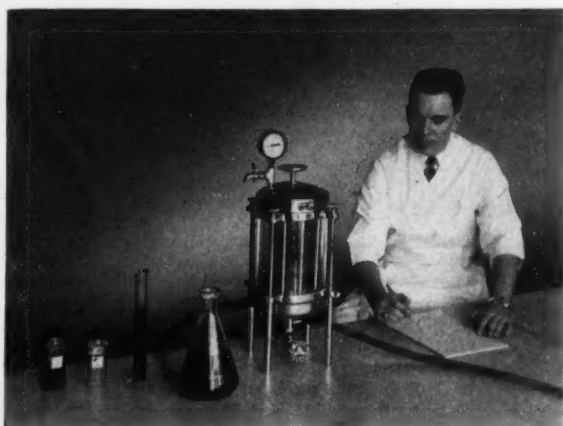
Pressure-leaf filtration methods can be tested on accurate working model . . .

performance data obtained on lab scale unit applies to nearly all enclosed pressure-leaf filters

Uses: For accurate testing of pressure-leaf filtration methods on a laboratory scale.

Features: Supplies performance data applicable to nearly all enclosed pressure-leaf filters. Reported to provide accurate laboratory scale reproduction of filtrate clarity, flow rates, cycle lengths, cake build-up and sluicing characteristics, under a wide variety of conditions.

Description: Small unit is a working model of a standard vertical pressure-leaf filter. It is supplied with tempered Pyrex glass tank cylinder, through which filter cake and liquid flow can be seen. If desired, a stainless steel shell can be specified. Several types of leaves are



Small laboratory filter is working model of large pressure-leaf filter

available. Filter construction is Type 316 stainless steel at all metal-liquid contact points. Easily disassembled.

Manufacturer suggests the following determinations with the filter: filterability of new products; filtration rate; testing of filter aids and their amounts; effect of dispersing agents on filter aids; cake washing efficiency.

(Made by Niagara Filter Corporation, Dept. CP, 3080 Main St., Buffalo 14, N. Y. . . . or for more information check CP 8397 on handy form, pages 2 and 3.)

Control valves small enough for pilot plant work

Illustrated specification sheet gives details of air-operated diaphragm motor valves for use on 1" line and smaller. All of the valves are built so that through use of a smaller plug, they will control flow of fluids as low as the range of 1/8" pipe. Intended primarily for pilot plant use, the valves have a very wide proportional band.

Depending on requirements, they can be made in bronze, cast iron or cast steel and handle pressures as high as 600 psi. Dimensions, supply requirements, capacities, and constructional features are shown in Specification Sheet 408-2, issued by Brown Instrument Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8398 on handy form, pages 2 and 3.

Votator

PROCESS NEWS

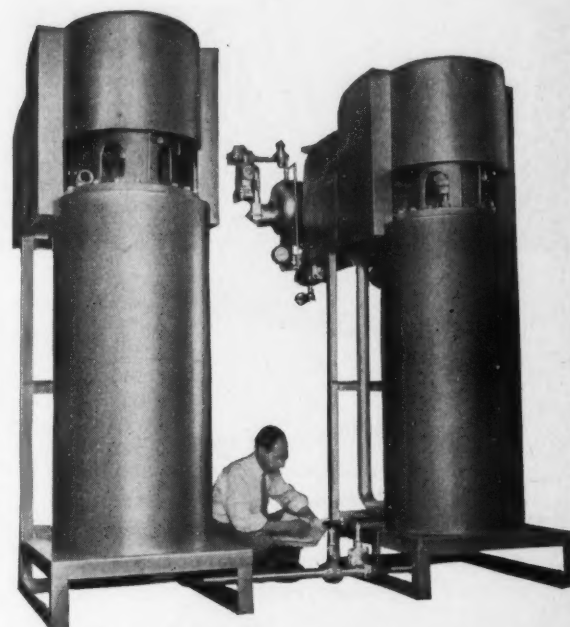
- HEATING or COOLING . . . CONTINUOUS CLOSED SYSTEM SAVES MANPOWER
- CRYSTALLIZING
- CONTROLLING HEATS OF REACTION

VOTATOR Heat Transfer Apparatus provides continuous, closed system operation, under precise mechanical control, for processing liquid and viscous materials. This results in substantial labor savings, since less handling is required, and the processing operation is completed in a matter of seconds.

Liquid resins and other chemical products, for instance, can be cooled to predetermined temperatures at rates from 20,000 to 30,000 lbs. per hour. Depending on the heat-transfer medium used, materials can be heated as high as 700°F, or cooled as low as -150°F.

Only a small quantity of material is processed at any one time, at high speed. Thus heating or cooling is accomplished quickly and efficiently. Close control over the entire operation assures complete uniformity of product, prevents contamination. The whole operation is faster, cleaner, more economical—and takes far less floor space than other methods.

In addition to heating and cooling, VOTATOR Heat Transfer Apparatus can be used for crystallizing and controlling heats of reaction. Girdler's complete service covers process engineering and design, manufacture of equipment, and installation. The Girdler Corporation, Votator Division, Louisville 1, Kentucky.



VOTATOR 24" Heat Transfer Units—heavy duty processing apparatus for the chemical field. Among products involving straight heating or cooling now being processed with VOTATOR Heat Transfer Apparatus are: phenolic resins, formaldehyde resins, alkyd resins, melamine resins, vinyl resins, wax, viscose, rosin, printing ink, chlorinated hydrocarbons, latex, asphalt emulsions, photographic emulsions, wax emulsions, linseed oil, lecithin, gelatine, and petrolatum.

GET THIS FREE BOOK TODAY!

This 32-page book gives you the complete story of VOTATOR Processing Apparatus. Describes the processing of an amazing variety of food and industrial products. Contains 12-page technical section with valuable reference data and charts. Write for free copy today.



VOTATOR—T.M. Reg. U.S. Pat. Off.

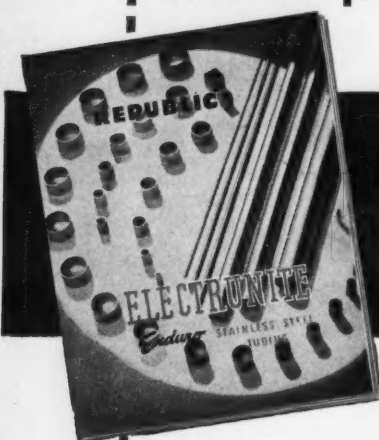
THE GIRDLER CORPORATION

Votator Division

When inquiring check CP 8399 on handy form, pages 2-3

ELECTRUNITE ENDURO STAINLESS STEEL TUBING

does the job best...



**FREE
BOOKLET
HELPS YOU
CHOOSE...**

Get more years of service at lower cost per year... specify ENDURO stainless steel tubing for most types of process equipment. Years more service will be added, the annual cost of the equipment will be reduced, maintenance costs will be lowered.

In the 28-page booklet "Republic Electrunite Enduro Stainless Steel Tubing," you'll find information and data to help you select the best available type of stainless steel tubing to do the job you're planning. This booklet will also help you design and fabricate stainless steel equipment.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION
224 EAST 131st STREET • CLEVELAND 8, OHIO



ELECTRUNITE®
STAINLESS STEEL TUBING AND PIPE

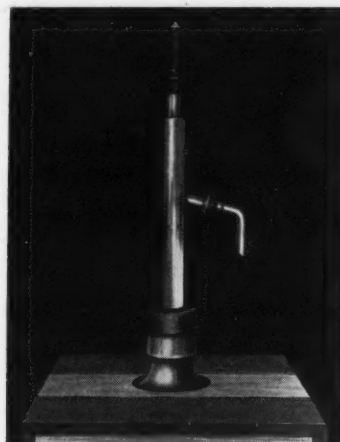
PROCESSING EQUIPMENT

Pump corrosive liquids In range of densities from carboys...

spillage, discharge vapors and contamination avoided no matter whether liquid is heavy or light

Uses: Dispensing corrosive liquids from carboys and other large containers made of glass, rubber or metal. Handles a variety of solvents, acids, alkalis and organic materials.

Features: Density of liquid no determining factor in operation, as pump functions on positive displacement principle. Heavier liquids are handled readily, but at slower pumping rates. Pump parts coming in contact with liquids are either Pyrex or Teflon, eliminating possibility of contamination. Hazards of discharged vapors and pressure sprays are avoided, as are dangers involved in tipping carboys.



Positive displacement carboy pump

Description: Pump is fabricated from heavy Pyrex tubing. Check valves are Pyrex and pumping ring is Teflon. Standard ball-joint connects pouring spout to pump body and is held in place with standard ball-joint clamp. Teflon pumping ring is readily replaced in case of wear.

(Carboypump is a joint development of Dow Chemical Co. and Glass Blowing Section of Sinclair Research Laboratories and is made by Laboratory Industries, Inc., Dept. CP, 4710 West North Ave., Chicago 39, Ill. . . . or for more information check CP 8401 on handy form, pages 2 and 3.)

Animal oils may increase petroleum supply

Armour & Co. has announced method of secondary oil recovery using two kinds of chemicals. One, made from beef tallow, increases ease with which water flows through sand. The second chemical prevents corrosion of water pipe, kills bacteria. (Industrial Research News Letter)

One stroke of heat sealer produces 54" long seam, 1/4 to 1 1/4" wide...

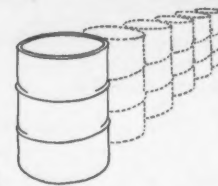
foot-operated bar type unit can develop pressure to 3/4 ton, assuring straight-line seal

Uses: Designed to heat seal all types of heavy coated or laminated heat sealing barriers.

Features: Range of seal sizes possible is 1/4 to 1 1/4" wide and up to 54" long (at a single stroke). Pressure is adjustable, and can be varied up to a maximum of 3/4 ton. It is because of this high pressure that a straight-line seal is obtained — without bleeding as evidenced by a sawtooth edge that may develop triangular tears.

Machine is operated by foot switch, leaving both hands of operator free to feed material into and out of the machine. Switch can be moved by operator to suit his convenience.

Better Service from steel drums through chemical resistant linings



Drums will have to work harder during the shortage. Put your steel containers into fit condition for extra service by asking your supplier to use a Unichrome Drum Lining made to stand repeated trips in contact with strong chemicals.

By using these linings, many newly developed chemicals, as well as various acids, alkalis, alcohols, petroleum derivatives, wetting agents, foodstuffs, cleaners, salt and other solutions can be securely shipped without damage to lining, corrosion of container and contamination of contents. Write us for information on linings available and the tough chemicals each can withstand.



COATINGS FOR METALS

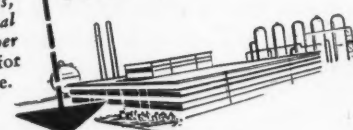
Products of UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 8402 on handy form, pgs. 2-3

In plants which actually manufacture the acids and alkalis you use, Prufcoat has been providing positive protection against costly corrosion for over 10 years now... on concrete floors, walls, ceilings, structural steel, tanks and other equipment. Write for Prufcoat literature.

**Where Acids or
Alkalis Destroy
Prufcoat PROTECTS**



NOW!

**A WHITE ENAMEL
THAT STAYS WHITE**

Write today for folder on Prufcoat BX White Enamel—the acid and alkali resistant white coating that stays white, inside or outside. Can be applied to moist surfaces.

Prufcoat Laboratories, Inc.
50 East 42nd Street
New York 17, N.Y.



Preventive Maintenance PAYS!

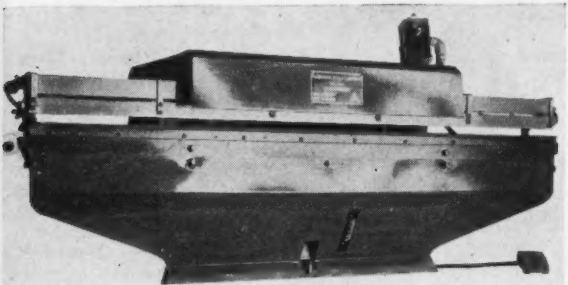
When inquiring check CP 8403 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 8400 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Description: Heating elements of the Model UHS-54 bar type heat sealer can maintain temperatures up to 550°F on the sealing surface. Control of temperature is provided



Heat sealer has 54" bar

by thermostat. Dwell time can be varied by means of unit's step pulley combination.

(Manufactured by Automatic Scale Co., Inc., Dept. CP, P. O. Box 46, Village Station, N. Y. . . . or for more information check CP 8404 on handy form, pages 2 and 3.)

Close-knit flooring composition . . . stops entry of disintegrators . . .

acid, water, oil, grease can't reach bonding element to destroy it

Uses: Recommended for new floors, for overlays over brick or stone or wood, for repairing or resurfacing areas of any size — either indoors or out.

Features: Micro-photographs reveal that there are practically no voids in the tight, close-knit composition,



AWOG floors said to outlast ordinary concrete by 3 to 1 hence there is little chance for common floor disintegrators such as acid, water, oil, and grease to enter and destroy the bonding element.

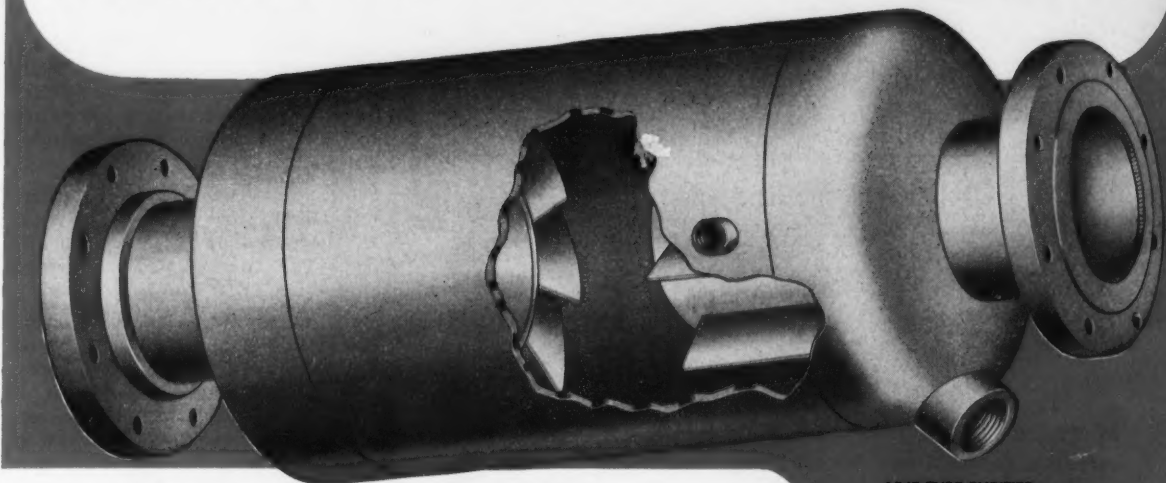
Reports state that composition will outlast ordinary concrete by 3 to 1.

Description: AWOG sets up to a smooth, case-hardened, dustless surface. The composition is made to withstand heavy loads, steel wheels, hard knocks, and it is sanitary and easily cleaned.

(Development of the Flexrock Company, Dept. CP, 3620 Filbert St., Philadelphia 4, Pa. . . . or for more information check CP 8405 on handy form, pages 2 and 3.)

Save Money with - - -

Anderson Hi-eF Line Type Purifiers



LINE TYPE PURIFIER, flanged connections, Bulletin #200

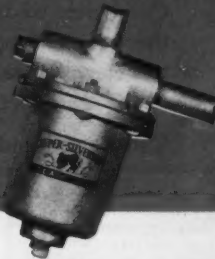
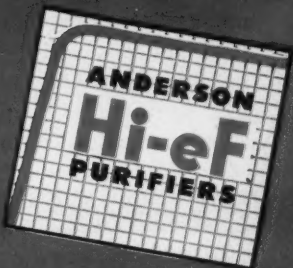
LOW COST UNITS REMOVE 100% ENTRAINMENT

You can *substantially* reduce your cost for separating equipment by specifying Anderson Hi-eF Line Type Purifiers. Now, for the first time, you can purchase high efficiency purifiers for the price of an ordinary separator! This fact is made possible by new, efficient production methods plus a new improved purifier design perfected by Anderson engineers with over 27 years experience in the development and special application of high efficiency purifiers. Despite the economy of first cost, Line Type Hi-eF Purifiers are unsurpassed by any similar unit—remove virtually 100% entrainment from gases and vapors.

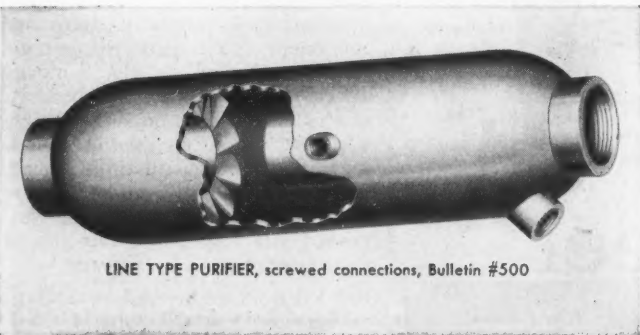
Anderson Line Type Hi-eF Purifiers pay rich dividends by removing entrained liquids, solids, condensates, oil or grease from live or exhaust steam, from processed gas, air, or chemical vapors.

Self cleaning, they have no moving parts or baffles . . . need no attention or periodic servicing. Good design permits extremely low pressure drop.

Save money. Specify low-cost Anderson Hi-eF Purifiers. Anderson manufactures all types in all sizes to any specifications. Mail coupon today for prices and bulletins.



MADE BY THE MAKERS OF SUPER-SILVERTOP STEAM TRAPS AND STRAINERS



LINE TYPE PURIFIER, screwed connections, Bulletin #500

**PURIFIER DIVISION,
THE V. D. ANDERSON COMPANY**
1959 West 96th Street • Cleveland 2, Ohio

Gentlemen: Please send additional information on Anderson Hi-eF Purifiers described in:

☐ Bulletin #200 ☐ Bulletin #500

Name _____

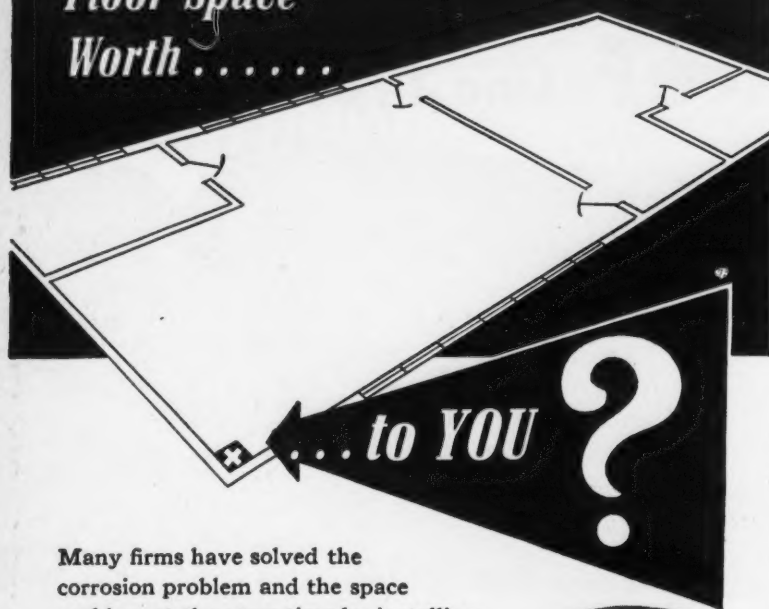
Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 8406 on handy form, pgs. 2-3

***How Much Is A Square Foot Of
Floor Space
Worth**



Many firms have solved the corrosion problem and the space problem at the same time by installing Fansteel Tantalum Condensers. Not only is Tantalum acid-proof (not merely "corrosion resistant") but its high heat transfer efficiency results in saving valuable plant space. One user increased production and saved 71.4 cu. ft. with Tantalum Condensers.

Fansteel Acid-Proof Tantalum Condenser

It is not uncommon for a Tantalum Condenser to dissipate 120,000 Btu. per hour through each square foot of heat transfer service. Moreover, being a metal, it is not subject to thermal shock.

Tantalum Condensers improve product purity and quality, require very little maintenance and make substantial savings in cooling water. Consult Fansteel for designs and recommendations. Fansteel Metallurgical Corporation, North Chicago, Illinois, U. S. A.

USE TANTALUM WITH ECONOMY for most acid solutions, corrosive gases or vapors, not with HF, alkalis or substances containing free SO₂.

Write for informative bulletins on Tantalum Acid-Proof Chemical Plant Equipment.



Fansteel

12402-C

Acid Proof
TANTALUM
CHEMICAL PLANT EQUIPMENT

When inquiring check CP 8407 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Delivers 2700 cu ft/min
of conditioned air with
capacity of 7 1/2 tons . . .**

easily installed since complete unit is within cabinet

Uses: Air conditioner is designed for cooling spaces as large as that of an average size retail store or general office.

Features: Because complete working mechanism is built into cabinet, installation is relatively simple. Only electrical, water and drain connections are necessary. Operation is fully automatic via a control knob.

Description: This 7 1/2 ton capacity Frigidaire air conditioner is 40" wide, 28" deep and 86 3/8" high. It delivers 2700 cu ft/min of conditioned air and has an air throw of 75 feet.

A 7 1/2 hp compressor is located in the bottom of the cabinet and features no external moving parts such as belts, pulleys, and flywheels, and yet is easily maintained. The air intake section houses a cooling unit which is constructed with 5/8" copper refrigerant tubing, 5 rows deep and 18 rows high with circular aluminum cooling fins. In front of the cooling unit is an aluminum mesh air filter.

Two large double-inlet, double-width, wheel-type fans powered by a 3/4 hp motor are housed in the air discharge section.

The unit can be installed remotely with ductwork if desired, and a two-row steam heat coil for heating purposes is available as accessory equipment.

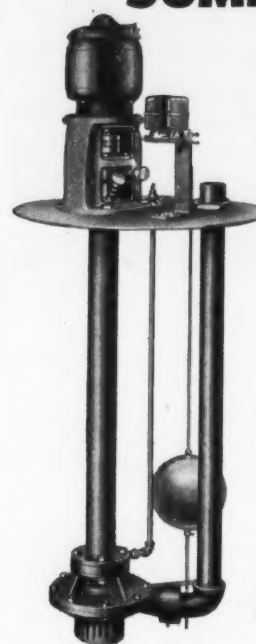
(A product of Frigidaire Division, General Motors Corp., Dept. CP, Dayton 1, Ohio . . . or for more information check CP 8408 on handy form, pages 2 and 3.)

Shows 16 pages of lab equipment

Sixteen-page bulletin illustrates and describes wide variety of laboratory equipment. Includes details on temperature-controlled ovens, motor-driven tumbling jars, manometers, safety cans for flammable liquids, stop watches, circuit control timers, magnifiers, lab circulating pumps, immersion heaters, humidity indicator, stainless steel trays, and improved salt fog testing cabinets to meet government specifications.

Bul 525 is issued by Andrew Technical Service, Dept. CP, 3805 N. Clark St., Chicago 13, Ill. When inquiring specify CP 8409 on handy form, pages 2 and 3.

NEW Deming SUMP PUMPS



● These new Deming Sump Pumps are designed for trouble-free service, easy maintenance and long life.

Features include heavy-duty construction, close tolerance dowel-ring fits from motor to impeller, positive alignment of all rotating and guide bearing parts, column connections flanged and bolted for easy maintenance.

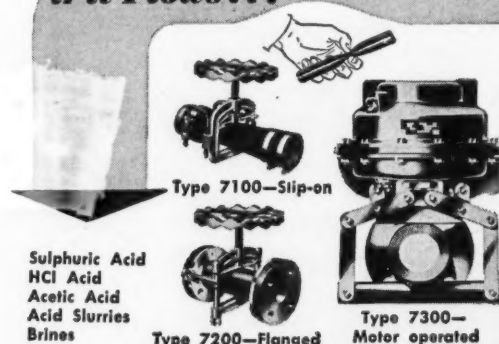
Pumps can be furnished in cast iron, bronze, Monel and stainless steel. Sizes range from 1 to 10 inch discharge with capacities from 10 to 3000 G.P.M., and heads up to 140 ft.

Complete details, selection tables, and accessories are illustrated and explained in new Bulletin No. 4600-A. Write for a copy.

THE DEMING COMPANY
522 Broadway • Salem, Ohio

When inquiring check CP 8410 on handy form, pgs. 2-3

if it Flows . . .



Sulphuric Acid
HCl Acid
Acetic Acid
Acid Slurries
Brines

Type 7100—Slip-on

Type 7200—Flanged

Type 7300—
Motor operated

Flex-Valve it

FLEX-VALVE is the ideal choice for handling such materials as those listed—either dry or in suspension—at temperatures up to 210 deg.

Resists both abrasion and corrosion; eliminates clogging, plugging, building up; absorbs vibration and misalignment.

Open—it's as free of obstruction as the pipe itself. Closed—it's bubble-tight and it closes tight on all of these materials.

Available in either hand or air operated types in sizes from 1/2 to 12 in.

Users have found FLEX-VALVE to be the low-cost solution to tough valving problems. If your present valves aren't 100% effective, take a look at this one. Catalog 455 gives details.



Flexible Valve Corporation
306 COMMERCIAL AVE. • PALISADES PARK, N. J.

When inquiring check CP 8411 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

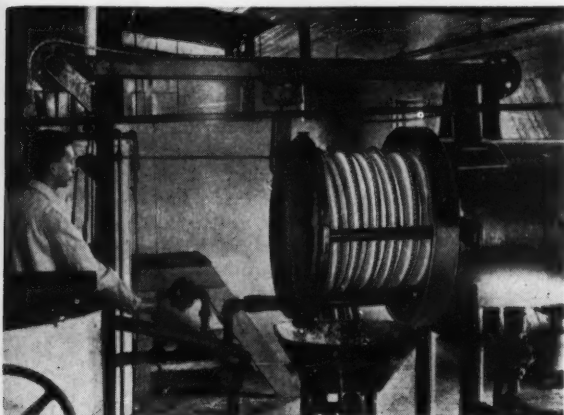
Cleaning of pressure-leaf filter is easy and fast . . .

stainless steel leaves slide out on monorail; cake is discharged by rapping leaves with mallet

Uses: Filter will find major application where large volumes of solids must be recovered — in filtering slurries having high solids content.

Features: Quickly cleaned with minimum of labor. Uses stainless steel leaves, no cloths.

Description: Pressure-leaf filter consists of a horizontal, welded, leakproof steel tank containing a retractable car-



Leaves roll out as a single unit on monorail. Windlass here is hand-operated; is motorized on larger units

riage on which the leaves are vertically mounted. Carriage and leaves roll out of the tank by means of a hand-operated or motorized windlass and monorail assembly, a permanent integral part of the filter. Cake is quickly separated from leaves by rapping the leaves.

Quick-opening cover locks and unlocks with one motion,



Cake drops off when leaves are rapped with rubber mallet. Air-blown cakes separate readily from the stainless steel leaves

and eliminates the usual handwheels, eyebolts and other complicated locking devices.

Sizes up to 150 cu ft of cake capacity are available, with flow rates up to 1000 gpm. Filter tank may be steam jacketed for higher temperature operation.

(Style H filter is a development of Niagara Filter Corporation, Dept. CP, 3080 Main St., Buffalo 14, N. Y. . . , or for more information check CP 8412 on handy form, pages 2 and 3.)

WHY ABBOTTS DAIRIES

CHOSE A REFRACTORY

FORTIFIED WITH ALCOA ALUMINA

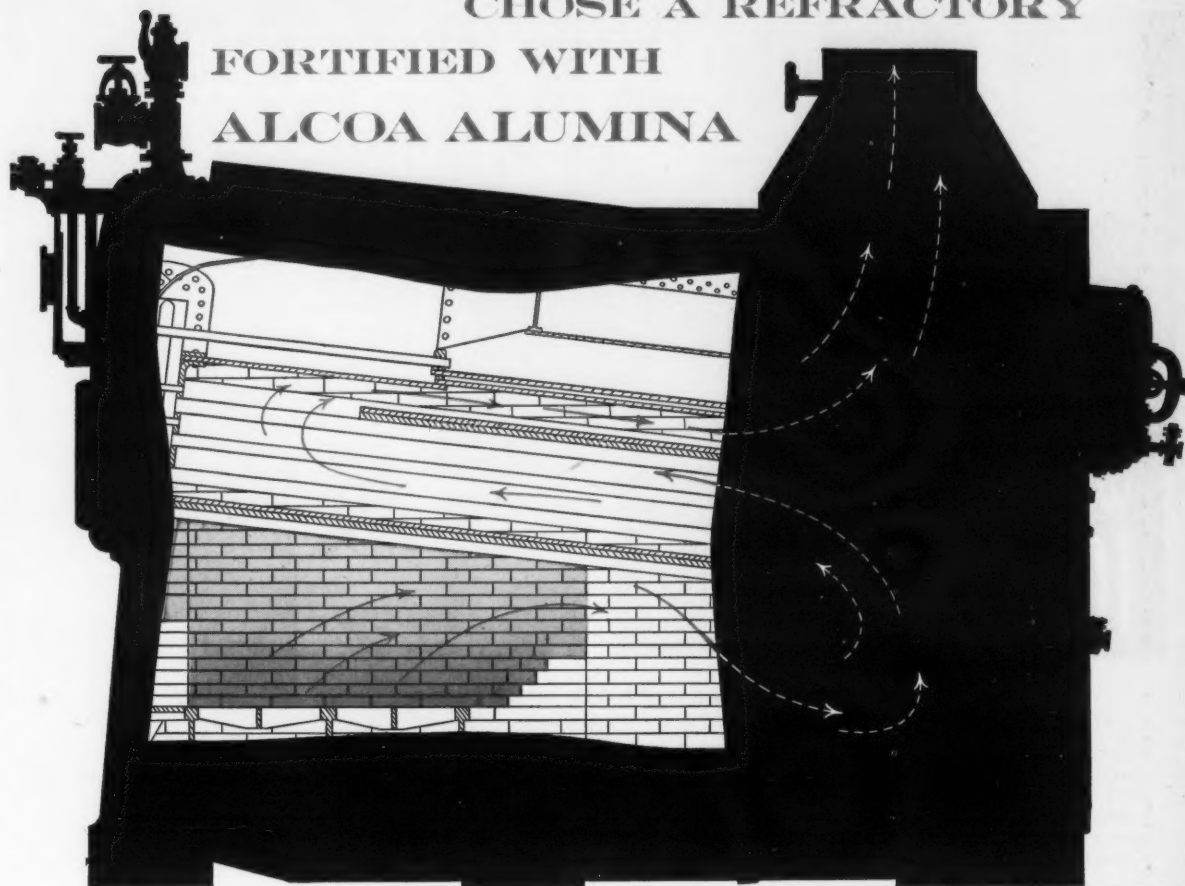


Illustration courtesy of Harbison-Walker Refractories Co.

Horizontal type boiler at Cameron creamery uses Korundal 90% ALCOA Alumina-content brick to resist extreme slagging by high iron oxide coal ash at unusually high temperatures. Korundal is used to a height of 30" above grates in side wall and for complete 9" facings of bridge and front walls.

REFRACTORY BRICK must prove itself the hard way at Abbotts Dairies, Bruce and Cameron, Wisconsin.

Six months of the year, round-the-clock, white-hot flames and molten slag torture boiler furnace walls in an extremely severe test for the best refractories available.

In 1944, Korundal, a 90% ALCOA Alumina-content brick, was installed experimentally in one of the Bruce creamery boilers. After a convincing demonstration of several years, high alumina-content Korundal was installed in Abbotts Cameron creamery boiler furnace,

because down-time and repairs cost more than good refractories.

Refractory brick made with ALCOA Alumina offers you these money-saving advantages:

- Strength and stability under load at high temperatures.
- Resistance to spalling, abrasion and fluxing at high temperatures.
- Resistance to corrosive slags and fumes.
- Low porosity.
- Negligible shrinkage.

You can buy refractory brick and other shapes, containing various percentages of ALCOA Alumina to meet your requirements, from leading manufacturers. We'll gladly refer you to dependable sources of supply. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606M Gulf Building, Pittsburgh 19, Pa.

Alcoa Chemicals

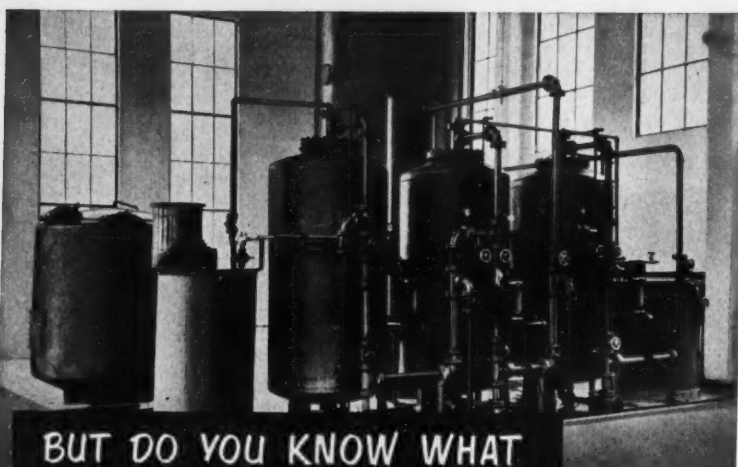


ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 8413 on handy form, pgs. 2-3

Sure we manufacture heavy process equipment . . .

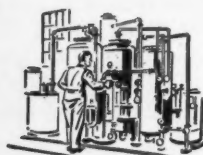


**BUT DO YOU KNOW WHAT
WE CAN DO FOR YOU IN
ION-EXCHANGE?**

Dorcco D-I System installed at a Norwegian Chemical Plant.

for instance, do you know that . . .

DORR can place at your disposal any portion of a complete service for handling ion-exchange problems . . . from problem analysis to initial plant operation.



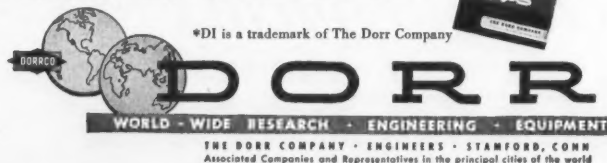
DORR can supply equipment for the treatment of water, and chemical or sugar bearing solutions of all kinds; for the extraction and concentration of some of the valuable metals from dilute solutions . . . in any capacity you require.



DORR will work with you on any phase of your ion-exchange program . . . whether it involves established principles or a new and confidential process.

If you are currently exploring the possibilities of ion-exchange for new processes or those already established we believe we can help you. And you'll find our ion-exchange facilities backed by solid chemical engineering knowledge.

Bulletin #4081 lists the high-spots of Dorcco D-I* Systems. Write to Ion-Exchange Sales, The Dorr Company, Barry Place, Stamford, Conn.



*DI is a trademark of The Dorr Company

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.
Associated Companies and Representatives in the principal cities of the world

When inquiring check CP 8414 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Cool, diffuse lighting
for lab studies . . .**

fluorescent lamp provides 500 foot-candles at 3"

Uses: Illumination for microscopes, titrations, study of cultures and other close work. Can be quickly converted to ultraviolet radiation source.

Features: Fluorescent tubes provide 500 foot-candles at 3" distance. Lighting is soft, diffuse and cool. Maximum operating temperature is 120°F.

Description: The Lite-Mite Fluorescent Lab-Lite uses twin 4-watt



General utility lamp for laboratory tubes rated at 7500 hours of normal operation. Has baked white enamel reflector and fine baked black wrinkle exterior.

(Product of Stocker & Yale, Inc., Dept. CP, Marblehead, Mass. . . . or for more information check CP 8415 on handy form, pages 2 and 3.)

Illustrates container and package line

Through its 16 pages, this booklet describes the company's laboratory, research, engineering and manufacturing facilities. Special reference is made to the art division which offers assistance in designing brand names for containers. The complete line of manufacture is illustrated, including cotton, burlap and open mesh bags, crinkled or crinkled and pleated liners, paper bags, slip-on barrel covers, polyethylene bags and liners, twines, protective papers and other packaging materials.

"Worth Looking Into" is issued by Chase Bag Co., Dept. CP, 309 W. Jackson Blvd., Chicago 6, Ill. When inquiring specify CP 8416 on handy form, pages 2 and 3.



THERMO-MAT radiates live, penetrating heat from floor to knees! Insures foot and leg comfort wherever you stand or sit — in cabs, booths, at desks, check stands, counters and countless other locations! Melts ice and snow on doorsteps etc. Safe and effective even on damp concrete. Economical — operates for a few cents per day. Reversible, long-lived neoprene rubber compound cover, lasts for years. Measures 14" x 22". Plugs into any 110-120 Volt electrical outlet. Maintains uniform temperature. Order by mail today! \$11.95 delivered! Thoroughly tested. Thousands used. Performance guaranteed! Free Folder!

THERMO-MAT CO.

814-C So. Robertson Blvd., Los Angeles 35, Calif.

When inquiring check CP 8417 on handy form, pgs. 2-3



When inquiring check CP 8418 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Mobility of pneumatic conveyor useful when filling hoppers of scattered machines . . .

contact parts can be made of stainless steel, hose of tasteless, odorless material

Uses: Designed to fill and periodically replenish machine supply hoppers or bins, and to empty containers and shipping drums without dumping same, thereby avoiding dusting and spillage.

Typical example in the plastics industry is where resin powders have to be transferred from shipping drums to the hoppers of a number of molding machines and injection presses.

Features: Mobility of equipment makes it handy to use where a number of machines in different locations must be serviced. Different materials can be handled in sequence, with little or no intermixing. All metal in contact with material can be stainless steel. Tasteless, odorless suction hose can be provided.

Description: Material is picked up by suction nozzle and conveyed through flexible hose to receiver located above machine hopper to be serviced. Gate valve at bottom of receiver can either be manually opened and closed or set for automatic operation. In the latter case, material feeds into machine hopper by gravity until receiver is empty. Gate closes instantly when conveying system is started.

Laden air entering receiver goes through a high efficiency cyclone head atop the receiver. Air and remaining fines then pass through flexible hose to motorized Airborne separator which removes

most of the fines. These fines drop into dust hopper under separator. Air leaving separator goes through another flexible hose, suction blower, and a filter bag for removing any fines that may remain.

Dust hopper under separator can be easily replaced when full. Separator, which normally rests on hopper to form air-tight joint, is slightly raised by handle and lever.

Receiver is made to suit, but is usually a 30" diam tank capable of holding six cu ft. It is designed for attachment of structural members for support from below or suspension from ceiling.

Hand truck is easily pushed by one man, has rubber tires, roller bearings and brake attachment.

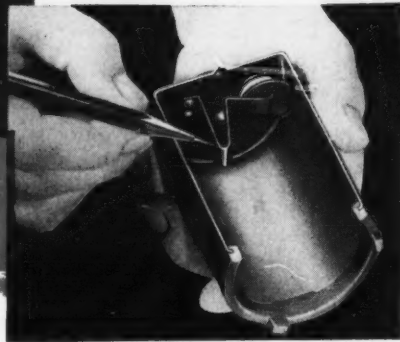
Conveying rate varies with kind of material and distance it has to be raised above the floor. Illustrated unit, in which material enters receiver at a point 9' above the floor, handles free-flowing materials such as granulated sugar at rate of 150 lb/min. Rate on non-free-flowing powders such as wheat flour is about 100 lb/min.

(Product of Airborne Conveyors Corporation, Dept. CP, 79 Hudson St., New York 7, N. Y. . . or for more information check CP 8419 on handy form, pages 2 and 3.)

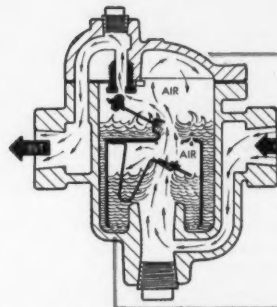
DECEMBER, 1951

ARMSTRONG "BLAST" TRAPS SPEED UP HEATING

**of Single Pipe Coils, On-and-Off Multiple Coils,
Unit Heaters, etc.**

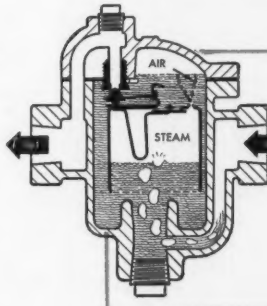


**AIR WHISTLES
RIGHT THROUGH**



VENT OPEN

Note large air bubbles "whistling" through large thermic-control vent to be discharged with condensate through open trap valve. Shaded grey area is condensate.



VENT CLOSED

After accumulated air and condensate are discharged, large vent closes. Small vent is always open to handle ordinary volume of air entering trap.

ARMSTRONG MACHINE WORKS

880 Maple Street • Three Rivers, Michigan



THE ARMSTRONG STEAM TRAP BOOK tells all about Armstrong Blast and Standard Traps—where to use them and how to select and install them. You are welcome to a copy. Just write for it.



ARMSTRONG STEAM TRAPS

When inquiring check CP 8420 on handy form, pgs. 2-3



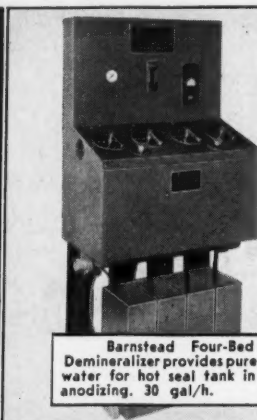
BARNSTEAD DEMINERALIZERS PROVIDE LOW-COST PURE WATER

for • Electroplating • Anodizing
• Photographic Solutions
• Salt-free Rinse Water • Silvering

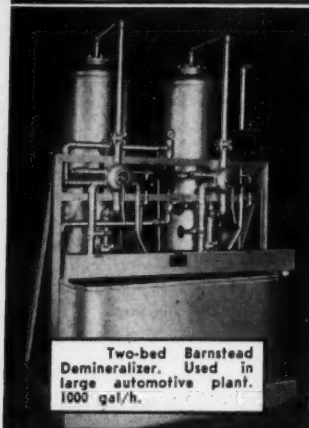
And Hundreds of Other Applications



Four-bed Barnstead Demineralizer providing pure, high resistance water for electronic mfg. 1000 gal/h.



Barnstead Four-Bed Demineralizer provides pure water for hot seal tank in anodizing. 30 gal/h.



Two-bed Barnstead Demineralizer. Used in large automotive plant. 1000 gal/h.



Four-bed Barnstead Demineralizer produces pure, sparkling-clear rinse water for pharmaceutical plant. 200 gal/h.

Selection of the best size and type of demineralizer for your operation depends on the nature of your raw water supply, flow rate needed, daily demand, and degree of purity required. Send a sample of your water to our Laboratory and Barnstead Engineers will perform the necessary analysis without obligation.

PROMPT DELIVERIES

WRITE FOR FREE CATALOG

Barnstead
STILL & STERILIZER CO.

66 Lanesville Terrace, Forest Hills, Boston 31, Mass.

When inquiring check CP 8421 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Prevents injury when vacuum dessicator shatters . . .

light yet strong aluminum guard holds 160 mm ID dessicator

Uses: Protects personnel against injury in event of breaking of small vacuum dessicator.

Features: Made of aluminum, the guard is light yet strong. Handles are provided for carrying enclosed dessicator from place to place.

Description: Holder, or guard, is comprised of two cylindrical portions which enclose a 160 mm ID or smaller dessicator when the two parts are fitted



Technician is safe with vacuum dessicator guard

together. Lower half has a solid bottom to retain any liquids that may be spilled. Most of both halves is perforated to relieve pressure.

Opening in top permits dessicator neck and stopcock to protrude.

The "junior" Desiguard is about 8" diam and 9" high. It supplements a previous large model for dessicators up to 250 mm diam.

(Made by Fisher Scientific Company, Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 8422 on handy form, pages 2 and 3.)

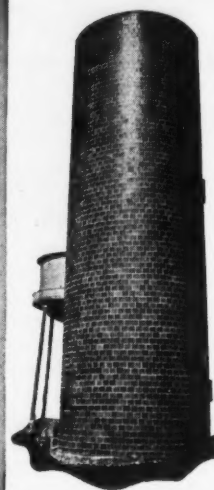
Industrial noises and their control

This pamphlet concerns itself with the problem of industrial noises and their control. Considered here, are the effects of noise upon employee efficiency and morale. "Noise Elimination" is issued by Industrial Acoustics Co., Dept. CP, 333 Jackson Ave., New York 51, N. Y. When inquiring specify CP 8423 on handy form, pages 2 and 3.

FOR LOWER STORAGE COSTS

SPECIFY

**Kalamazoo
GLAZED TILE**



You practically eliminate maintenance problems and costs when you store bulk materials such as coal, gravel, and sand in tanks and silos made of Kalamazoo Glazed Tile. Far superior to concrete — easy to clean — cannot contaminate contents. For a permanent low-cost installation, specify Kalamazoo Glazed Tile.

WRITE FOR COMPLETE FACTS

Kalamazoo TANK AND SILO COMPANY

1232 Harrison Street • Kalamazoo, Michigan

When inquiring check CP 8424 on handy form, pgs. 2-3

EVERY ARTICLE IN CHEMICAL PROCESSING IS "STAFF WRITTEN"

Every article in CHEMICAL PROCESSING is terse, brief, to-the-point . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . keep up with developments . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Weighing device can be located in processing equipment . . .

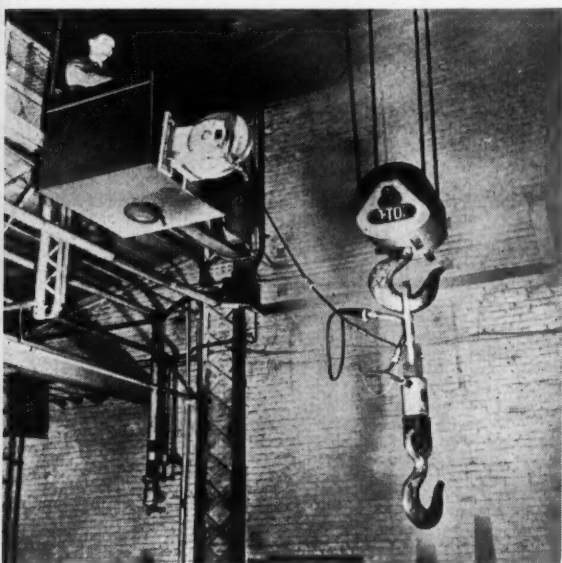
based on strain gauges, electronic scale has remote printer for recording weights

Uses: Basic elements of this weighing system can be adapted to virtually any industrial weighing problem. Suggested designs include weighing-conveyor lines, railroad track scales, crane and hoist units, etc.

Features: It should be noted that the tendency with this equipment is to eliminate any separate step for weighing; the measurement is made while some other operation is in progress.

Description: Ametron Electronic Scale is based on the use of SR-4 load cells and employs stepping cams to produce printed strips or tickets showing weight. Circuit is arranged for null-point operation. Load cells in bridge circuit register unbalance when a load is applied. The signal is amplified and a motor, driven by amplifier, runs stepping cams and also varies a resistor which brings the bridge back into balance.

Variety of load cells available allows them to be used in almost any type of equipment. Illustration shows load cell, white cylinder above lower hook, installed on a crane. In any case the printing unit can be located wherever it is convenient, since only electrical connections to the load



Loads are weighed while being moved with this crane

cell are needed. Load cells can be used as compressive members of structures such as supports for platforms, sections of track or conveyor, and so forth. Cells are rugged and will stand loading up to 120% of rated capacity without permanent changes in their characteristics. Readings may be erratic during sudden temperature changes.

Flexibility of the system is the biggest advantage over conventional weighing equipment. Any number of load cells may be used. Dials, special printers, recorders and other special equipment may be used with the system. Remote indicators can be installed far from the weighing site.

Allowances for tare, and changes of range are accomplished with controls of the instrument. Where accurate weighing is needed, the range can be narrowed to increase sensitivity.

(Development of Streeter Amet Company, Dept. CP, 4101 N. Ravenswood Ave., Chicago 13, Ill. . . . or for more information check CP 8425 on handy form, pages 2 & 3.)

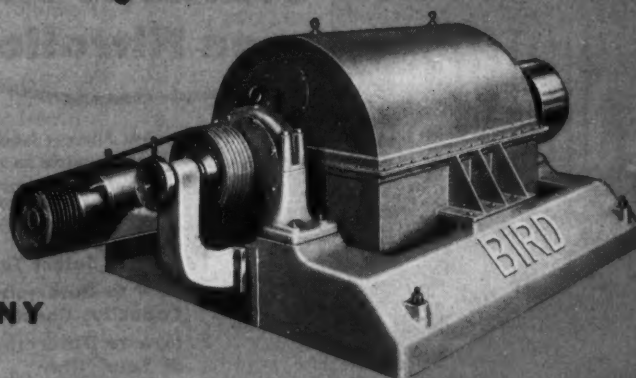
Don't let **FILTRATION** slow you down

Maybe there was a time when
filtering dammed the flow sheet —
but not any more!

Bird Centrifugal Filtration is a
high capacity, high production
process—clean, quick, continuous,
automatic, economical. No batches.
No filter cloths to clog up or replace.
No vacuum. No auxiliaries.

Filtration Facts Fast—

The Bird Research and Development Center is set up for one purpose only — to develop accurate, authentic information on any and every solids-liquids separation problem — and do it without delay.



BIRD MACHINE COMPANY
South Walpole, Massachusetts

THE BIRD

CONTINUOUS CENTRIFUGAL FILTER

When inquiring check CP 8426 on handy form, pgs. 2-3

heart of the strainer

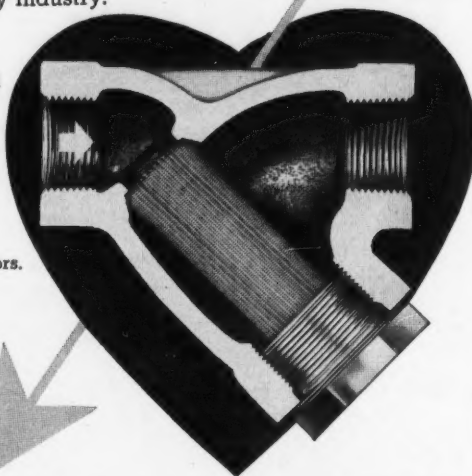
A high-grade, woven Monel wire screen is the heart of the Yarway Strainer—one reason why hundreds of thousands of these strainers are policing pipe lines in nearly every industry.

OTHER REASONS —

- cadmium plated bodies and screen caps
- straight threads, machined faces and spark-plug-type gaskets on screen caps
- ten sizes from 1/4" to 3"

Sold by 216 industrial distributors. Write for Bulletin S-203.

YARNALL-WARING CO.
125 Mermaid Ave.
Philadelphia 18, Pa.



YARWAY STRAINERS

When inquiring check CP 8427 on handy form, pgs. 2-3

THIS NEW SHRIVER BOOK

**Gives
STRAIGHT FACTS
on Filtration**

The new Shriver book serves as a valuable guide in selecting the right type of filtration equipment for improving your process and product. It tells—

1. How to Select Your Filter
2. How to Determine Type, Capacity, Construction
3. How to Determine Cost of Your Filter
4. Applications of Filters

FREE

T. SHRIVER & COMPANY, Inc., 846 Hamilton St., Harrison, N. J.
Send me New Shriver Filtration Book

MAIL TODAY

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 8428 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Underwater Installation
is OK for electric
heating cable . . .**

sealed loop heats, and prevents condensation, snow loading

Uses: Important industrial use is heating of pipe, fittings and pumps to keep liquids flowing in cold weather. Process machinery housings can be wrapped with the wire and covered with insulation to prevent condensation from falling onto material being processed below.

A few other applications: preventing accumulation of snow and ice on roofs, in gutters and downspouts; preventing ice from forming on walking surfaces (when wires are embedded in asphalt or concrete).

Features: Completely sealed against moisture and electrical leakage; can be operated under water. Thermostatic control can be provided, but manual control is usually satisfactory.

Description: Thermwire is a flexible heating cable consisting of a loop of nichrome heating wire covered with a special fire-resistant, weatherproof synthetic sheath. A 10' rubber-insulated cold lead wire section with plug is permanently attached to the loop. Connection of Thermwire and lead is sealed in vulcanized rubber.

Thermwire is made up in two packaged sets: one set 80' long, 400 watts, 115 volts; the other 160', 800 watts, 230 volts.

(Made by Edwin L. Wiegand Co., Dept. CP, 7611 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 8429 on handy form, pages 2 and 3.)

Brief analysis of ultraviolet light and its applications

A general discussion of the physical nature of light serves as introductory material for this brief 12-page treatment of ultraviolet light. One main section deals with an analysis of luminescence and its various sources, such as electroluminescence, chemiluminescence and photoluminescence. The applications of fluorescent analysis serves as the topic of the other important section of description.

Here, this analytical procedure is highlighted in terms of chemical analysis, identification of materials (paper, glass, porcelain and fabrics), crime investigations, forgery and imitation. "Ultra-Violet Light or Black Light" is issued by Oklahoma Engineering Experiment Station, Oklahoma Agricultural and Mechanical College, Stillwater, Okla.

**NO BOLTS, RIVETS,
OR WELDS
with**

TRI-LOK

OPEN STEEL FLOORING

Tri-Lok open steel flooring is fabricated of cross-bars (see B above) twisted in opposite directions at each bearing bar (note arrows on A¹, A²), and pressed into position by a 1600-ton press! Truss action forms a rigid framework ideal for stairs, walkways, decks, loading platforms, and engine room installations.

Maximum openings allow ample light and ventilation, but no object over one-half inch square can slip through. Rectangular or U-type construction. Variety of metals—stainless steel, aluminum alloy, etc. Riveted and Tri-Forge welded flooring available. Write for Bulletin OB-1103.

DRAVO

CORPORATION

National Distributor for The TRI-LOK Company

Dravo Building, Pittsburgh 22, Pa.

Sales Representatives in Principal Cities



When inquiring check CP 8430 on handy form, pgs. 2-3

DUNCAN & BAYLEY, INC.

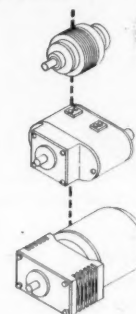
POSITION SERVO ACTUATORS

ZERO BACKLASH for LIFE

independent of extreme precision

Zero backlash is achieved in Duncan & Bayley Position Servo Actuators by virtue of design rather than high cost fabrication. No springs, no close tolerances on gear centers, no split gears are employed. Reduced shock loading eliminates excessive tooth wear. In addition, Duncan & Bayley Position Servo Actuators incorporate these PLUS advantages.

- Function independent of ambient temperature beyond most airborne requirements.
- Eliminates motor armature inertia; effective torque to inertia ratio improvement 20:1. Torque is independent of speed.
- Torque repeatable for equal conditions within $\pm 1\%$ independent of speed.
- Improved amplification factor, output 80 watts for 40 MA (3 watt) control.
- Continuous heat dissipation 40% of maximum rating.
- Life consistent with typical industrial machinery.



Applications for
Duncan & Bayley
Position Servo
Actuators
Radar antennae
Transmissions
Autopilots
Computer Drives
Valve Servos
Tension Controls

MANUFACTURED BY

DUNCAN & BAYLEY

DIVISION OF GENERAL RIVETERS, INC.

785 Hertel Avenue,
Buffalo 7, N. Y.

When inquiring check CP 8431 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Applies reinforcement as it punches holes for loose leaf . . .

pressing lever converts it back to ordinary punch
Uses: Reinforcing and punching papers for loose-leaf or other binders.

Features: Applies gummed tape to reinforce hole as it is punched. If ordinary punch action is desired, a flip of a lever converts the punch so that no tape is used.

Description: Tape is carried in spool magazine and is applied as part of the punching action. Magazine is de-



Punched and reinforced paper is shown (lower right). The tape comes from the spools at the rear

signed for easy loading. A three-ring model is under development and should appear soon.

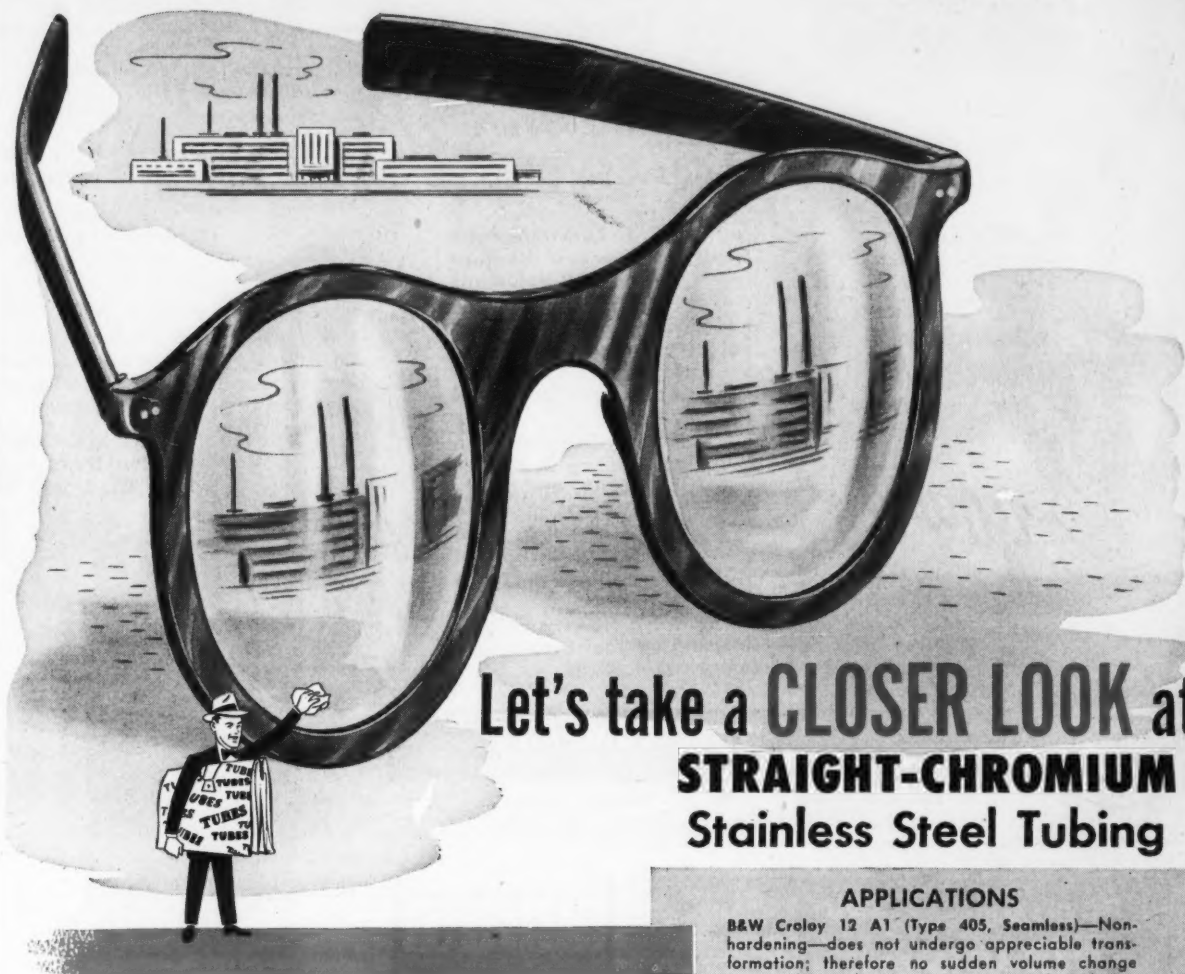
(Exclusively distributed by Stationers Supply Corporation, Dept. CP, 82 Wall St., New York 5, N.Y. . . . or for more information check CP 8432 on handy form, pages 2 and 3.)

Brazing method eliminates voids and oxide islands

A process of silver brazing is outlined in this two-color, four-page bulletin. The technique involves use of base metals onto which the brazing alloy is already affixed by diffusion. Thus, during the heating cycle of the brazing operation, as the alloy reaches the melting point it stays in place because it is anchored to the parent metal. Additionally, as the flux takes effect, the metal flows so that a uniform thickness is obtained, resulting in a controlled, sound joint.

With this method, dependence on capillary creep, as with other brazing practices, is entirely eliminated, as are voids and oxide islands. These "pre-clad" metals can be blanked, stamped, rolled, bent or otherwise shaped just as if the brazing alloy were not present. Information in the catalog covers a few of the applications, and physical characteristics of the joint produced by the method. Bulletin BC-51 is issued by American Silver Co., Inc., Dept. CP, 36-07 Prince St., Flushing 54, N. Y. When inquiring specify CP 8433 on handy form, pages 2 and 3.

DECEMBER, 1951



Let's take a CLOSER LOOK at STRAIGHT-CHROMIUM Stainless Steel Tubing

APPLICATIONS

B&W Crolay 12 A1 (Type 405, Seamless)—Non-hardening—does not undergo appreciable transformation; therefore no sudden volume change occurs during heating—corrosion and oxidation resistant. Typical uses: Conveyor lines in oil refining and chemical processing, heat exchanger tubing, boiler tubing in mercury heat cycle, catalytic oil cracking processes where fins have been welded to tubes.

B&W Crolay 12 (Type 410, Seamless and Welded)—Hardenable—moderate corrosion and heat resistance. Typical uses: Machinery in the chemical and food processing and packaging fields.

B&W Crolay 18 (Type 430, Seamless and Welded)—Sufficient ductility for forming simple parts—good corrosion and oxidation resistance—can be polished or buffed to pleasing finish. Typical uses: Conveyor lines in chemical processing field; condensers and piping in production, transportation, and storage of nitric acid and in nitrating operations involving mixed acids; furnace parts; retorts; ornamental structures.

B&W Crolay 27 (Type 446, Seamless)—Corrosion resistant—excellent heat resisting qualities. Typical uses: Furnace parts, heat interchangers, kilns, pyrometer protection tubes, soot blower elements, dehydrogenation equipment in chemical and oil refining fields. Also well suited for glass sealing applications.

Present restrictions on nickel have cut production of austenitic stainless steel tubing far below demand. If this critical shortage of nickel-bearing stainless tubing is compelling you to find other suitable grades, you should take a closer look at the straight-chromium analyses.

Readily available in quantity from B&W are pipe and tubes of the four non-nickel-bearing types listed at the right with typical uses. These ferritic and martensitic steels are magnetic at ordinary temperatures after all conditions of heat treatment, have relatively high oxidation resistance at elevated temperatures, and resist attack by many corrosive media. With certain modifications in procedures, they can be satisfactorily fabricated by all methods applicable to austenitic grades.

For both pressure and mechanical applications, tubes of straight-chromium stainless analyses are worthy alternatives for hard-to-get nickel-bearing stainless types. Would you like a copy of TDC-140 containing technical data on these easy-to-get grades of stainless tubes? Ask Mr. Tubes—your B&W Tube Representative—about their suitability for your applications.

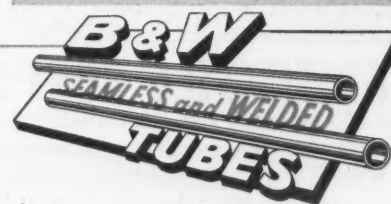
THE BABCOCK & WILCOX TUBE COMPANY

Executive Offices: Beaver Falls, Pa.

General Offices & Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
 Alliance, Ohio—Welded Carbon Steel Tubing

Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill.
 Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich. • Houston 2,
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 Pa. • St. Louis 1, Mo. • San Francisco 3, Calif. • Syracuse 2, N. Y.
 Toronto, Ontario • Tulsa 3, Okla.



When inquiring check CP 8434 on handy form, pgs. 2-3

TA-1651S



yours

Write us
to receive
copies monthly



W. S. ROCKWELL COMPANY

Slide and Butterfly Valves • Steam Traps • Oil Burners

220 Elliot Street

Fairfield, Conn.

When inquiring check CP 8435 on handy form, pgs. 2-3

Latest Developments in Control Valves for Air • Gases Liquids • Semi-Solids

The W. S. Rockwell Valve News describes new developments in Rockwell automatic and manually controlled Butterfly Valves, Slide Valves and valves of special design for use in plant piping and processing equipment for control and shut-off.

It presents interesting ideas in design, construction, method of valve operation and industrial applications to meet the various conditions of physical and chemical nature of the material handled, pressure and temperature.

The Valve News is helpful in sizing up your current and future valve needs.

PROCESSING EQUIPMENT

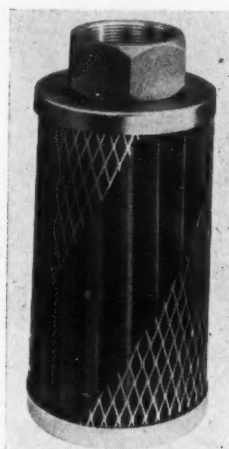
**75 and 100 gal/min models
are latest additions
to filter series . . .**

capacity range is now 5 to 100 gpm in both line and sump types

Uses: Filters for hydraulic and low pressure liquid recirculating machinery requiring such protection.

Features: Addition of 75 and 100 gpm models to established filter series. May provide adequate filter capacity to equipment which formerly needed multiple filter installation, thus simplifying maintenance.

Description: These higher flow rate models bring filter series to 8 — capacities are 5, 8, 10, 20, 30,



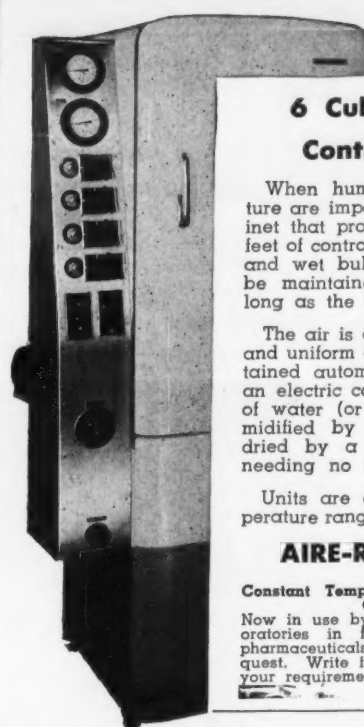
Hydraulic filters are available in both line and sump types

50, 75, and 100 gpm. All are available in both line and sump types, with mesh sizes from 30 to 200. The 75 gpm model measures 12½" overall with 6" diameter. The 100 gpm model runs 14" overall with 6½" diameter.

(Filters are products of Marvel Engineering Company, Dept. CP, 625 W. Jackson Blvd., Chicago 6, Ill. . . or for more information check CP 8437 on handy form, pages 2 and 3.)

Manual of glassware well illustrated

This 190-page laboratory glassware catalog is divided into seven, well illustrated sections. Their descriptive matter covers such items as Pyrex and Vycor brand laboratory ware, tubing and rods, and Pyrex brand fritted and pharmaceutical ware. "Corning Laboratory Glassware Catalog" is issued by Corning Glass Works, Dept. CP, Corning, N.Y.



6 Cubic Feet of Controlled Air

When humidity and temperature are important here is a cabinet that provides about 6 cubic feet of controlled air . . . both dry and wet bulb temperatures can be maintained within 1° F. as long as the unit is in operation.

The air is constantly circulated and uniform conditions are maintained automatically; heated by an electric coil, cooled by a coil of water (or other coolant), humidified by a spray chamber, dried by a mechanical device needing no attention.

Units are available with temperature ranges from 40° to 140° F.

AIRE-REGULATOR

Constant Temperature and Humidity Cabinets

Now in use by many prominent laboratories in food, research, paint, pharmaceuticals, etc.—names on request. Write for bulletin and tell us your requirements.

Food Technology, Inc.

5911 Northwest Highway
Chicago 31, Illinois

When inquiring check CP 8438 on handy form, pgs. 2-3

Cut glove costs 60% - 65% and solved lost-time problem

CASE NO. 147

Problem: High injury rate and glove replacement expense due to tearing of heavy unlined rubber gloves, which exposed workers' hands to plating acids and sharp metal edges.

Solution: Redmont 14" gauntlets, of NEOX (specially reinforced neoprene) over fabric base, gave maximum protection from snagging and biggest cost saving. (Cost only half as much as gloves previously used and gave much longer service.)



Reduce costs, improve safety and increase production with the correct gloves for your operation

Free Test Offer: Send brief description (on business letterhead) of operation, materials handled, temperature conditions. Without cost we will supply samples of type glove we recommend, plus helpful test data. Address

Edmont Mfg. Co., 1204 Walnut St.
Cochecton, Ohio

World's largest maker of coated industrial gloves—
NEOX, natural rubber and plastic



Edmont
COATED FABRIC
GLOVES

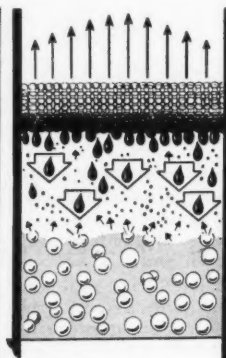
When inquiring check CP 8439 on handy form, pgs. 2-3

CHEMICAL PROCESSING

ARE YOU
BOTHERED BY
ENTRAINMENT?

Look into METEX MIST ELIMINATORS

... and see how they will help
boost production and cut costs



Removal of liquids entrained in gases is simple . . . economical . . . effective—when you use Metex Mist Eliminators! As the mixture passes through the Mist Eliminator, the entrained liquid is wiped out and retained by the extensive KNITTED wire area—until it coalesces into drops that are large

enough to fall back through the rising flow. The gas passes on—freed from entrainment.

Efficiencies 95% or better • Little if any pressure drop • Can be installed in existing equipment • Made of practically any metal • No moving parts

Worth looking into, isn't it? Ask for your free copy of "Metex Mist Eliminators", an 8-page brochure that's packed with facts. Or write us about your specific entrainment problem.

METAL TEXTILE CORPORATION

KNITTERS OF WIRE MESH FOR MORE THAN A QUARTER CENTURY

659 East First Avenue Roselle, N. J.

When inquiring check CP 8436 on handy form, pgs. 2-3



PROCESSING EQUIPMENT

Contaminant leaves clothing after 15 seconds under safety shower . . .

most efficient of 3 models has sprays which wet all parts of body at once

Uses: Emergency showers for quenching fire on worker's clothing, or for diluting and removing acids or other foreign materials contaminating clothing or body.

Features: Offered in three basic models to meet requirements of maximum, medium and minimum exposure. Model for maximum exposure — the Series 5010 — has sprays located so all portions of clothing and body are wetted instantly. Tests with a high-viscosity water-soluble material showed that this model removed all material completely from all parts of the body, without rubbing, in only 15 seconds.

Description: Sprays of the 5010 are located as follows: orthodox overhead sprays, four bottom sprays that reach up under smocks and coats, four sprays at base of shower for the feet, two special sprays that play on eyes and face. Shower can be entered from two sides, and is activated by slight pressure on a gate which swings in either direction. Valve remains open until manually closed. Shower is made for indoor or outdoor installation.

Series 5026 is slightly less efficient than the 5010. Worker must turn around to get full body coverage in this model because it has fewer sprays. Shower can be entered from three sides, and is activated in the same manner as the 5010.

The Series 5040, for minimum exposure, has sprays which are all directed downward to wash off upper portions of clothing and body. It is accessible from all directions, and is activated by slight pressure downward on a telescoping rod. Base of rod is anchored to floor so it cannot be hit and swung out of ready position. Valve-opening mechanism is directly attached to 1/4-turn, full-opening, non-leaking valve which remains open until manually closed. A chain can be substituted for the rod.

(Products of Logan Emergency Showers, Inc., Dept. CP, P. O. Box 111, Glendale, Calif. . . . or for more information check CP 8440 on handy form, pages 2 and 3.)

Two folders present data on linear transducers

Two, two-color folders describe and illustrate differential transformers for use where measurements which can be related to small motions are to be made. Temperature and pressure, for example, could be measured with these transformers in conjunction with Bourdon tubes or bellows.

Transformers are frictionless in operation and can be used where only minute forces are available. Folders explain that the devices are linear to within 0.1 of 1%.

Engineering Data Folder 55 covers the Class 6205 transformer which is used for relatively large motions. Applications include flowmeters, cross-beam motion indicators for weighing devices, etc.

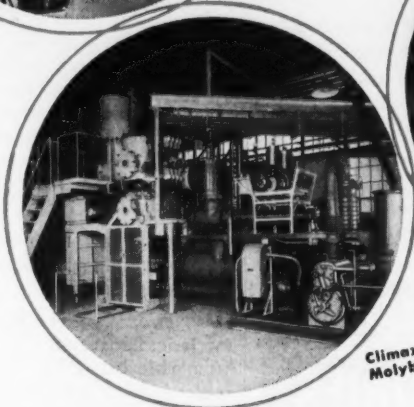
Folder 56 shows the smaller Class 6204 transformer with a linear range of 0.15 inches in either direction. Sensitivity of this unit is 1 in 5000 when used in a null-point system.

Folders are issued on letterhead request to Automatic Temperature Control Co., Inc., Dept. CP, 5212 Pulaski Ave., Philadelphia 44, Pa.

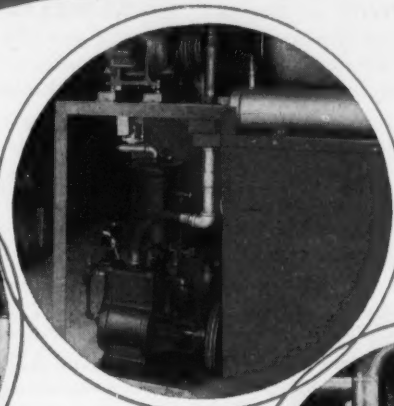
DECEMBER, 1951



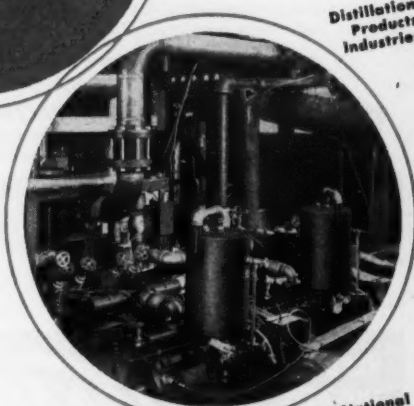
Sylvania Electric Products



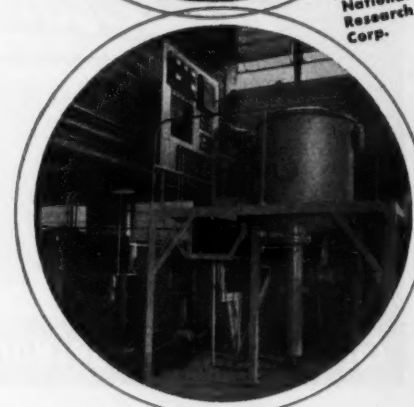
Climax Molybdenum



Proctor & Schwartz



Distillation Products Industries



National Research Corp.

- Sylvania Electric Products is producing super-size TV picture tubes in this giant merry-go-round.
- Climax Molybdenum uses this high vacuum furnace for metallurgical research.
- Proctor & Schwartz and Dry-Freeze Corporation have developed a process for freeze-drying materials which would otherwise be damaged by high temperatures.
- Putting a thin layer of metal on cellophane is the job of this vacuum coating machine made by Distillation Products Industries.
- Metals are melted and cast to a new high standard of quality in this National Research Corporation vacuum furnace.

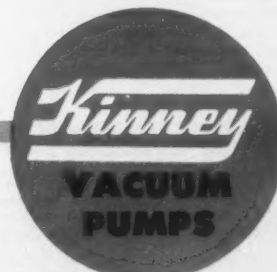
Each of these installations is different: each is designed to perform a highly specialized task. But all have this in common — all use KINNEY HIGH VACUUM PUMPS to get down to low absolute pressures fast and dependably.

For your vacuum needs, be sure to get a KINNEY, the pump that's seen in the best of circles. Send for new Bulletin V-51B. KINNEY MANUFACTURING CO., 3573 Washington St., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle.



◀ SEND FOR THIS NEW BULLETIN V-51B

FOREIGN REPRESENTATIVES: Gen'l Engineering Co., Ltd., Radcliffe, Lancs., England • Horrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia • W. S. Thomas & Taylor Pty., Ltd., Johannesburg, South Africa • Novelectric, Ltd., Zurich, Switzerland • C.I.R.E. Piazza Cavour 25, Rome, Italy.



When inquiring check CP 8441 on handy form, pgs. 2-3

Transfer HEAT 10 Times FASTER WITH SILICON CARBIDE* REFRACTORIES



THERMAL CONDUCTIVITY of Electro Silicon Carbide is approximately ten times that of fire clay. Think of the time gains in transferring heat through muffles and hearths!

THERMAL SHOCK RESISTANCE, combined with relatively low thermal expansion, guarantees that Electro Silicon Carbide Refractories will withstand the shocks of sudden and violent temperature changes.

Tell us your refractory requirements so that we can apply our 32-year experience with special purpose refractories to your individual needs.

Write NOW For Special Bulletin B-749

**(Unique, Versatile Artificial Mineral)*

ELECTRO REFRACTORIES & ABRASIVES CORPORATION

344 Delaware Ave., Buffalo 2, New York

Plants: Buffalo, N. Y. and P. Q., Canada • Regional Warehouse: Los Angeles 38, Cal.

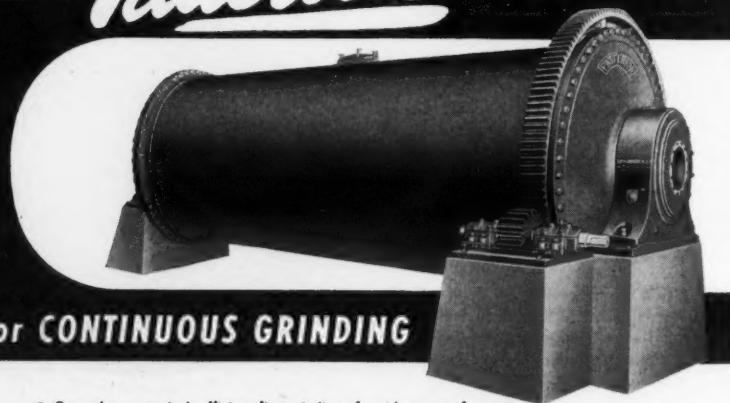


Special REFRACTORIES

When inquiring check CP 8442 on handy form, pgs. 2-3

HERE IS
THE NEW

Patterson TUBE MILL



for CONTINUOUS GRINDING

• Smooth, economical, efficient fine grinding of a wide range of materials, with continuous feed and discharge. Supplied with cast alloy steel, silica or Porox linings, or jacketed (with unlined shell), these Mills may be operated in open or closed circuit depending upon type of product required. Write for details.

Richard L. Cawson President



The Patterson Foundry and Machine Company

East Liverpool, Ohio, U. S. A.

NEW YORK BOSTON BALTIMORE PHILADELPHIA PITTSBURGH DETROIT CINCINNATI
CHICAGO ST. LOUIS HOUSTON DENVER LOS ANGELES SAN FRANCISCO SEATTLE

The Patterson Foundry and Machine Company, (Canada) Limited

Toronto, Canada
MONTREAL

When inquiring check CP 8443 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Refrigerating unit valve
has pressure range
of 0 to 55 lb . . .**

one valve can now meet specific requirements of any application

Uses: Can be incorporated into refrigeration units ($\frac{1}{2}$ to 1 ton capacity) for use with freon 12 or 22, and methyl chloride coolants.

Features: Because of its fully adjustable range of operation (0 to 55 lb), this valve offers protection against motor overload or compressor damage.

For example, when due to initial pull-down or overload, the operating suction pressure exceeds the valve pressure setting, the Model 209 meters refrigerant in lesser amounts until the overload condition has passed.

During this period, the valve remains open and throttles like an automatic expansion valve — resulting in smooth valve operation and efficient evaporator performance.

Description: The Model 209 Thermostatic Expansion Valve's inlet is a removable brass, $\frac{1}{4}$ " SAE male flare; outlet is $\frac{1}{2} \times \frac{3}{8}$ " SAE male combination flare. Actual weight of valve is 1 lb 6 oz, and it has a 0 to 20°F adjustable superheat range.

Body is of forged brass, while other components such as diaphragm, head, ball needle and valve seat are of stainless steel.

The valve and its capillary may be mounted in any ambient temperature and in any position, with the thermo bulb higher or lower than the valve.

An external equalizer is available and recommended for high pressure drop coils. It has a standard $\frac{1}{4}$ " flare connection.

(Manufactured by A-P Controls Corp., Dept. CP, Milwaukee 45, Wis. . . or for more information check CP 8444 on handy form, pages 2 and 3.)

Features line of mixers

Four-page, fully illustrated bulletin features line of industrial mixers. Included are: turbine type mixer; agitator with rotary seal; variable-speed mixer; mixers that enter through top fill opening in drums; mixers mounted on mobile and stationary frames; and batch type mixer consisting of tank and mounted agitator and drive. In many cases, air motors may be specified instead of electric ones.

Bul 512 is issued by Conn and Company, Dept. CP, 1530 Pennsylvania Ave., W., Warren, Pa. When inquiring specify CP 8445 on handy form, pages 2 and 3.

THIS IS JUST THE BEGINNING of the successful applications for Filtrol Adsorbents

- Synthetic and natural resins
- Plasticizers
- Chemical intermediates
- Organic solvents
- Coal tar products
- Fatty acids
- Cresylic acids
- Sulphur
- Naphthenic acids

WITHIN THE RANGE OF THE VERSATILE PROPERTIES OF FILTROL ADSORBENTS . . . the chemical industry may find many new uses for improving manufacturing processes and products. High uniformity and the ability to pinpoint adsorbent specifications to exacting product requirements for decolorization or selective adsorption assure optimum processing economy.

Filtrol's technical staff is available to assist in the solution of adsorbent applications.



Filtrol CORPORATION

General Offices

727 West Seventh Street, Los Angeles 17, California

*T.M. Reg. U.S. Pat. Off.

When inquiring check CP 8446 on handy form, pgs. 2-3

UNEQUALED IN FILTERING CHEMICALS

for— HIGH FLOW RATES
LESS DOWN TIME
POSITIVE CAKE STABILITY
QUALITY, SPEED AND ECONOMY

SPARKLER FILTERS

Available in

stainless steel
mild steel
rubber lined
monel, nickel
bronze, Hastelloy
steam or brine
jacketed



Write Mr. Eric
Anderson for personal service
on your engineering problems.

SPARKLER MFG. COMPANY, Mundelein, Illinois

When inquiring check CP 8447 on handy form, pgs. 2-3

CHEMICAL PROCESSING

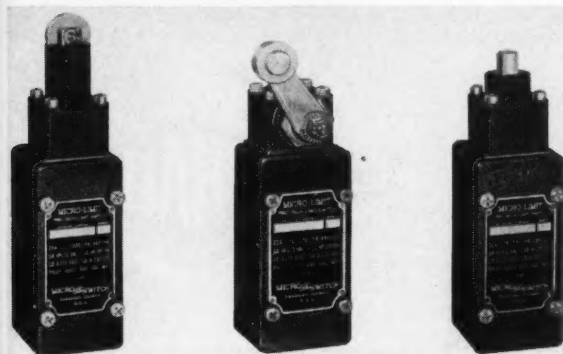
Adds two more actuators to line of precision limit switches . . .

meet requirements of NEMA standards for non-ventilated enclosures — watertight and submersible

Uses: Type 2ML1 is suggested for use where operating force is applied directly in line with the plunger movement; 5ML1 is suggested for use with slow moving cams.

Features: Tests indicate the switches will meet requirements of NEMA Industrial Control Standards for non-ventilated enclosures of Type IV-ICI-1.2-Watertight and Type VI-ICI-1.15-Submersible. On the submersible test, specified conditions of the laboratory test were a 30" head of water for a period of 72 hours.

Description: A straight plunger actuator distinguishes Type 2ML1 while 5ML1 has a roller-plunger actuator. The roller-plunger actuator is adjustable 90 degrees in either direction to place the roller in line with the actuating force.



Line of "ML" precision limit switches — 5ML1 on extreme left and 2 ML1 on extreme right

Both types require an operating force of about 6 lb while the release force measures about 4 lb. The contact arrangement is SPDT. Underwriters' Laboratories list the following ratings: 20 amp, 110, 220 or 460 v AC; ½ amp, 115 v DC; ¼ amp, 230 v DC; and ¾ hp, 220 v AC.

(Type "ML" Micro-Limit switches are products of Micro Switch, Dept. CP, Freeport, Ill. . . or for more information check CP 8448 on handy form, pages 2 and 3.)

Welding process uses gas shield to bar slag formation

Described in this 8-page catalog is a process which consists of feeding a bare filler wire in conjunction with shielding gas (argon or helium) through a unit where the wire picks up welding current supplied by a standard welder. The shielding gas forms an envelope around the welding area, thereby protecting the weld metal, the electrode wire and the work. This serves to eliminate the formation of slag and the necessity of using flux.

Information is given on equipment for both manual and automatic operation and on the wires which are of aluminum, nickel, copper and stainless steel. Photographs and sketches of the equipment are supplemented by on-the-job illustrations of a number of applications. Form ADC 717 is issued by Air Reduction, Dept. CP, 60 East 42nd St., New York 17, N. Y. When inquiring specify CP 8449 on handy form, pages 2 and 3.

TYGON

Versus

HNO₃

NITRIC acid on the attack is hard to stop. However, there are good defenses available and one of the best is the versatile group of TYGON plastic compounds. Properly used, TYGON—as tank lining, gasketing, flexible piping, or protective coating—displays excellent resistance to nitric acid over a useful range of concentrations and conditions.

Essentially, TYGON consists of selected polyvinyl resins skilfully modified with other materials to give the optimum in chemical resistance and desirable physical properties. Solid TYGON is available in calendered, extruded, or molded form. Liquid TYGON is available as a plastisol or as a solvent type paint. Such variety in form permits the best use of TYGON for a specific application.

In calendered form, TYGON is generally used as a material of construction. Volume use is as a lining for tanks and tank covers, drums, hoppers, fume hoods, and fume ducts. Widest use is as cut gaskets and washers for sure, durable seals in all types of chemical process equipment. As a 3/32" calendered sheet, TYGON resists nitric acid in concentrations up to 30% by weight and temperatures as high as 150°F. Permissible concentration depends upon the temperature of service, with only the lower strength solutions being advised for the higher temperature. When cut into gaskets, calendered TYGON can be used with practically any concentration of the acid as the slight swelling and other changes that take place in the small exposed area serve only to make a tighter seal and have very little effect on the protectability or functioning of the entire gasket. Either as sheet or gasket, TYGON is not recommended for service with mixed or nitrating acids without previous consultation with U. S. Stoneware engineers.

In extruded form, TYGON is used primarily as a medium of transmission. However, extruded solid cord, channel, or tape are also used as materials of construction.

Smooth walled, light weight and flexible, TYGON Tubing, in sizes up to 2" ID, is used in a great number of laboratories and plants for the safe, efficient transmission of liquids, gases and semi-solids. In many plants,

TYGON is being used as flexible piping in permanent or temporary transfer lines, as flexible connections, as line desurgers, as ports on chemical pumps and filters, or as syphon hoses.

As tubing, TYGON is resistant to nitric acid in any concentration and at temperatures up to 130°F. For brief, intermittent exposures, the temperature limit can be increased to 150°F. However, in any service with nitric acid, the life of TYGON Tubing is directly dependent upon the length of exposure and the care given the tubing. Short periods of service and frequent cleanings are suggested. The counsel of our engineers is recommended.

In molded form, TYGON sees service as gaskets, grommets, washers, stoppers, handles, bumpers and special fittings. Where necessary, it can be reinforced with glass fibers for added strength. With or without reinforcement, molded TYGON generally is suitable for service with nitric acid of any concentration and temperatures as high as 150°F. Specific limitations depend upon the size and design of the piece, the temperatures and pressures involved, and other conditions of service. Use with mixed or nitrating acids is not advised without consultation.

As a paint, TYGON, in contact with nitric acid, must be considered in the light of the limits of a thin film. Generally, a TYGON paint film is resistant to the fumes of nitric acid in all concentrations and up to 150°F. However, contact with highly concentrated hot nitric acid is to be avoided and any spillage, regardless of concentration, should immediately be washed off. The minimum system recommended for any service with nitric acid consists of a primer and no less than five top coats.

As a plastisol, TYGON finds use as a heavy duty coating and in the casting or "slush" molding of flexible fittings and parts. For coating work, it can be applied by dipping or spraying on hot metal, and, then, fusing. Resistance to nitric acid varies, depending upon the thickness of the coating deposited.

In any of its forms, TYGON provides low cost protection and high degree of safety in the handling of not only nitric acid and related chemicals, but a wide range of other acids, alkalis, oil, greases and water.



In addition to TYGON in its various forms, we also manufacture a number of other materials capable of handling nitric acid in any concentration and under all types of operating conditions. These products include chemical stoneware and porcelain, acid proof brick and cements, and other organic linings and coatings.

Why don't you submit your corrosion problem, today? There's no obligation and we'll be pleased to be of assistance. So write, now!

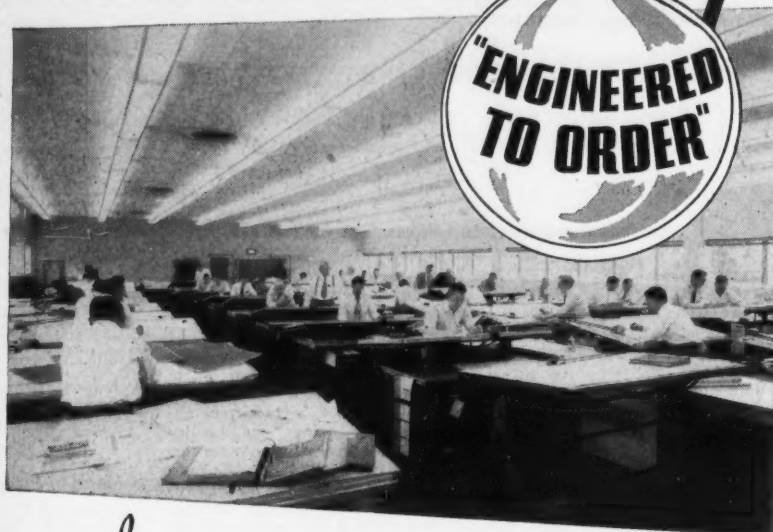
THE UNITED STATES STONEWARE CO., Akron 9, Ohio

ENGINEERS, MANUFACTURERS, ERECTORS OF CORROSION-RESISTANT EQUIPMENT SINCE 1865

When inquiring check CP 8450 on handy form, pgs. 2-3

Humidity

**"ENGINEERED
TO ORDER"**



Increases WORK EFFICIENCY THROUGH COMFORT
AT COOPER-BESSEMER'S ULTRA-MODERN OFFICE BUILDING



In line with company policy, Cooper-Bessemer Corporation, Mt. Vernon, Ohio, has again insisted upon the best—this time in their air conditioning system. Engineering management recognized at once the importance of the new science of humidity conditioning that eliminates all-too-common chill, shock, and clamminess.

"No over-the-counter sale of humidity conditioning equipment for us," reasoned C-B management. As a result, the new offices were completely Kathabar-engineered.

Now, comfortable C-B employees turn out maximum work all year around in their Kathabar-conditioned offices. Summer conditions maintained at 78°F., 45% RH; winter conditions maintained at 75°F., 30% RH.

This is one of many similar installations of Kathabar humidity conditioning for comfort. Don't overlook humidity in your own plant.

KATHABAR
DIVISION

★ Send for further Kathabar information today on your company letterhead.

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

"Humidity Engineering"
with the **Kathabar System**

When inquiring check CP 8451 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Uniform extrusion thickness
assured by multiple screws
of plastics extruders . . .**

plastic materials and other ingredients can be mixed and extruded in single step

Uses: Typical products made on extruders include: tapes, sheets, beltings to thicknesses as low as 8 mils (or down to 3 mils by inflation process); thick-wall tubing, both flexible and rigid; channels and other sections for car fender piping, weather stripping, etc.

Other major uses are compounding, coloring and pelletizing. In compounding, plastic materials are mixed with plasticizers, heat stabilizers, sometimes lubricants, and are completely mixed and extruded in a single operation. Clear polystyrene can be mixed with dyes or pigments, fed through the twin-screw extruder, and cut or chopped to make colored granules ready for injection molding or re-extrusion as a finished product.

Features: Multiple screw exercises positive and constant pressure on plastic material fed to barrel and forced through die. There is complete absence of pulsation; there-



Multiple-screw extruder and control console

fore, uniform thickness and close tolerance can be counted on, even for products with adjacent sections of different widths.

Description: Stokes-Windsor extruders are available in three models: the RC-65 and RC-100, both twin-screw models; and the RC-200, a triple-screw model. Model number indicates nominal capacity in lb/hr.

Output of two or more machines can be combined to yield a wide range of interesting multi-color and multi-material products.

(Products of F. J. Stokes Machine Company, Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. . . or for more information check CP 8452 on handy form, pages 2 & 3.)

**Radiant-heat-burner Igniting
safer with this system . . .**

spark ignitor, gas supply valve and flame supervising system are interconnected

A recently developed system for igniting radiant-heat burners assures safety during operation.

Burners, arranged in series upon a gas supply manifold,



for
**SUBMERGED
OILLESS
BEARINGS**



WITH CONFIDENCE

- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE—even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

**GRAPHITE METALLIZING
CORPORATION**

1004 NEPPERHAN AVENUE, YONKERS 3, NEW YORK

When inquiring check CP 8453 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Catawissa

PERFECT SEAL Unions

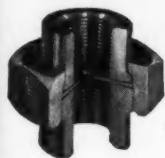
HOT FORGED from solid RECTANGULAR STEEL BARS to give you **SURE-FIRE PIPING DEPENDABILITY**

A TYPE FOR EVERY USE! PERFECT SEAL even with pipe not in alignment!



Standard & Double Extra Heavy UNIONS

Available with screwed or socket weld ends. 3000-lb. sizes $\frac{1}{8}$ " to 3"; 6000-lb. sizes $\frac{1}{8}$ " to 2".



ORIFICE UNIONS

With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

MALE & FEMALE UNIONS

With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

FULL STAINLESS & FULL ALLOY STEEL UNIONS

With screwed or socket weld ends. 3000-lb. and 8000-lb. service.

CATAWISSA Ends Guesswork in Union Requirements!



write for CATALOG 11 showing the complete Catawissa line

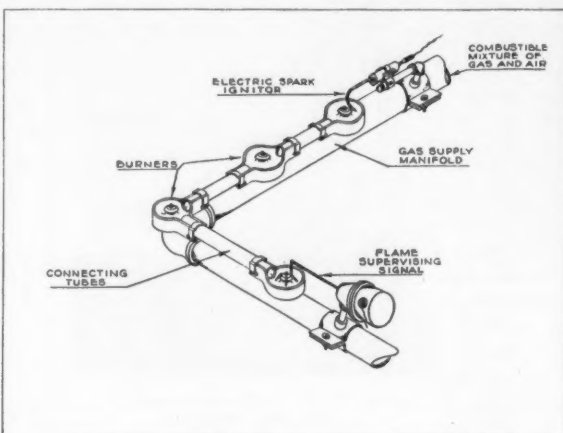
CATAWISSA VALVE AND FITTINGS COMPANY
620 Mill St. • CATAWISSA, PA.

When inquiring check CP 8454 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

are ignited at one end by an electric spark when a manual pushbutton is depressed. This energizes the automatic gas supply valve at the same instant, permitting gas to reach all of the burners through the manifold and connecting tubes.

A flame supervising device, located at last burner of



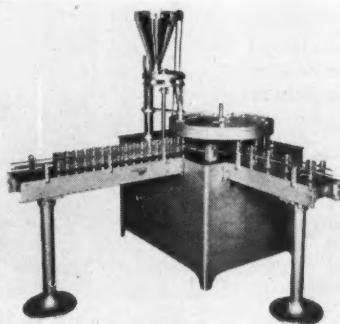
series, will shut off gas supply, after release of the manual pushbutton, if its contacts are not closed by flame in the burner. In normal operation, contacts of the flame supervising device remain closed, and gas supply valve will remain open because it receives current through the device.

(Burdett Manufacturing Company, Dept. CP, 3433 W. Madison St., Chicago 24, Ill.)

Tight packing of powders and granular materials result of scientific agitation . . .

units handle wide range of flat-bottom containers
Uses: Designed especially to handle granular and powdered materials where vibration for a tight pack and elimination of dust accumulation are required.

Features: Suitable vibration is furnished in the rotary section to permit products to settle fully and to provide fill at high speeds. Dust accumulation is controlled at the same time by the seating relationship of the container adaptor spouts to the container openings. This adaptor relationship to the container (rotary feeding head) allows a group of containers to be filled and vibrated at the same time and to settle fully before going to the outgoing side of the conveyor.

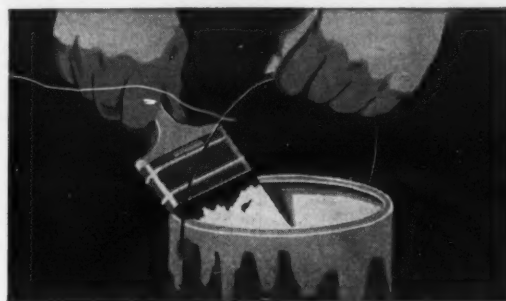


Right angle travel arrangement for corner installation

Description: Automatic rotary filler and conveyor combination is a high speed packer for flat bottom containers in a broad range of sizes and shapes, having wide or narrow openings. Each model is custom built to fulfill specific needs of production line space, container and product physical characteristics.

(Continued on next page)

from paint



to potato chips!

wide-awake process men value

DOWTHERM

the MODERN heat transfer medium

Yes, in addition to its economy and efficiency, DOWTHERM® is safer!

DOWTHERM is used in an indirect system in which the fire is removed from any flammable material in process. High-temperature operations can now be accurately and safely controlled. DOWTHERM presents little hazard in handling, in shipping and storage.

Today DOWTHERM users, whether they be paint manufacturers or food processors—or engaged in any other high-temperature operation—enjoy a security unknown in earlier systems. If your operations require precise heating in the 300°-750° F. range, write to Dow for complete information about DOWTHERM.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN



THE DOW CHEMICAL COMPANY
DEPT. DO-24
MIDLAND, MICH.

Name _____ Title _____

Company _____

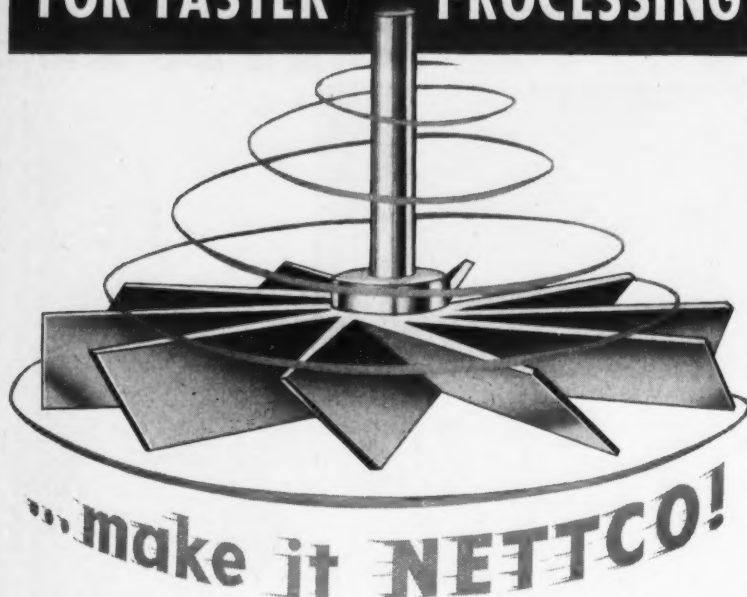
Address _____

City _____ State _____



When inquiring check 8455 on handy form, pgs. 2-3

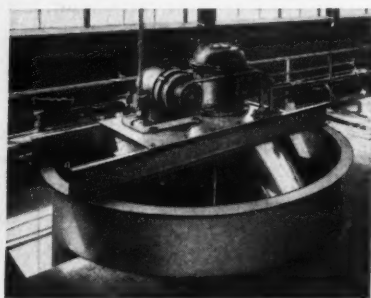
FOR FASTER PROCESSING



Feel the need for speed in your processing operations?

Then it will pay you to put NETTCO Engineered AGITATORS on the job. These units are designed to work fast and dependably, to provide the exact mixing action you need, to give you the most agitation output per horsepower input.

Surprisingly, it usually costs less to buy Netco because Netco combines standard units for special effectiveness. Standardized Netco components — drives, stirrers, baffles, accessories — are combined on the basis of actual engineering and field experience. Every unit is factory-tested, your assurance that the Netco installation will do the job and do it right.



Netco WT-37 Agitator Drive (25 HP motor) for mixing thick, inert liquids in 4500 gallon batches. (Salem Oil & Grease Co.).

No wonder so many major companies depend on Netco exclusively whenever processes call for agitators. Write, giving details on your process requirements. NEW ENGLAND TANK & TOWER COMPANY, 93 Tileston St., Everett 49, Massachusetts.

NETTCO Engineered AGITATORS

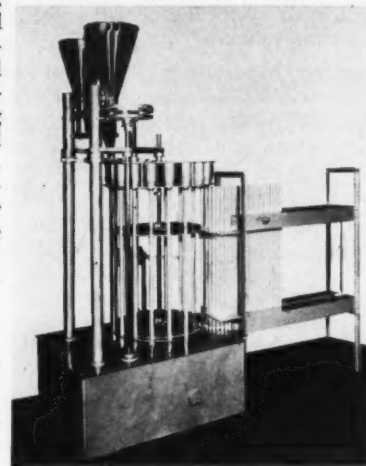
When inquiring check CP 8456 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

(Continued from preceding page)

Conveyor outlet can be constructed in any one of four ways. Illustrations show: right angle travel for corner installations and special hand feed arrangement for extra long tube containers and conveyor outlets. The other arrangements provide for discharge to the position of initial feed and for an in-line installation.

("Whiz-Packer" automatic rotary and conveyor combination is built by Frazier & Son, Dept. CP, 338 Cortland St., Belleville 9, N. J. . . . or for more information check CP 8457 on handy form, pages 2 and 3.)



Special hand feed arrangement for long tube containers

Air exhausted outside cleaned of dust at a rate of 2450 cfm . . .

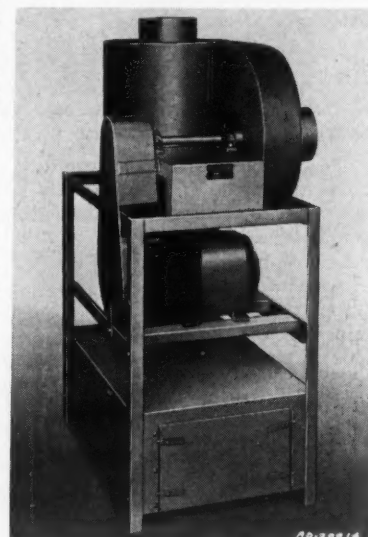
belt drive unit operates on 25 cycle power and is available from stock

Uses: For out-of-door exhaust of air that has been cleaned of industrial dust, but which still contains toxic fumes. Suitable for use with dusts such as those generated by buffing, polishing, and conveying and mixing of various materials.

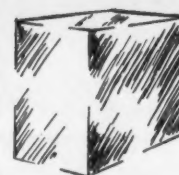
Features: Designed for use on 25 cycle power. Available from stock, it can be put into service with predictable results.

Description: Capacity of unit, according to tests with approved testing instruments, is 2450 cfm on a single 6" outlet, with 4.5" static suction. The size of the outlet for discharge of cleaned air to atmosphere is 8". Floor space is 22 x 40". Overall height is 78". Furnished motor is for operation on either 220 or 440 v, 3 phase, 25 c power. However, motors for operation on other powers can be obtained.

(Model 20ND30 dust collector is built by Agat-Detroit Co., Dept. CP, Ann Arbor, Mich. . . . or for more information check CP 8458 on handy form, pages 2 and 3.)



Collector operates on 25 cycle power



Cut Plastic



Stock Into Pieces Of Exact Dimensions



With

TAYLOR-STILES PRECISION CUTTERS

Two types of Taylor-Stiles cutters are in extensive use by plastics manufacturers to pelletize stock without longs or fines.



1. **Tandem Cutters** which cut stock into strips and cross cut the strips into rectangular pieces using two machines set at right angles.

2. **Dicing Cutters** which combine both operations slitting the stock into strips and then cutting the strips accurately into pellets.



Send for 4 page, 2-color illustrated folder describing Taylor-Stiles plastic cutters.

TAYLOR-STILES & CO.
20 Bridge Street Riegelsville, N. J.

When inquiring check CP 8459 on handy form, pgs. 2-3

CHEMICAL PROCESSING



MADE by the Cleveland Vibrator Co., the Type F vibrator will soon stop that nasty plugging and arching condition in chutes, bins, hoppers, screens, and any other materials handling devices you use to move or settle chemicals.

It's made in six sizes and will make from one to several hundred tons of stubborn material cry uncle in no time. It's doing it every day in other plants like yours.

Thanks to air, intensity of vibration can be varied at will, from feather-touch, gentle persuasion to heavy hammer-like blows against the skin of the container.

Send for engineering layout data sheet and catalog. We're glad to send you an installation recommendation without obligation.



2807 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 8460 on handy form, pgs. 2-3

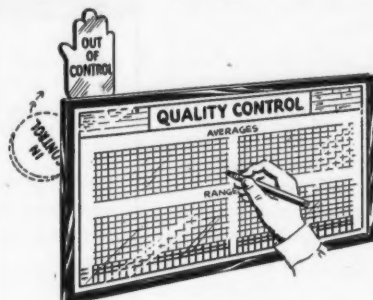
DECEMBER, 1951

PROCESSING EQUIPMENT

Grease pencil marks on acetate sheet read on chart . . .

replaceable chart form is held in frame under plastic; marks can be wiped off for reuse of same form

Uses: For scheduling production or indicating progress on production or projects.



Features: Chart form may be standard or made to order — while it is replaceable, it can be reused indefinitely since the actual markings are made on a sheet of acetate film held over the chart by the frame.

Description:

Type A Visi-Trol

holder (shown) is designed for inprocess control. Recording, done with grease pencil, can be copied or photographed for permanent record. Replaceable chart is inserted in the holder by means of a removable top in the steel frame. Backing is 1/2" plywood.

If chart and records are to be retained permanently, a type B is recommended. Steel frame and plywood backing are similar to other type, but a heavy acetate window is substituted and hinged at top for ease of handling.

Either of the holders may be supplied with the "In Control" and "Out of Control" devices shown. In control sign is a green ball, while conditions out of control are shown by the red hand. Both signs are pivot-mounted.

(These and other chart devices are products of Visi-Trol Corporation, Dept. CP, 9345 N. Hubbell St., Detroit 28, Mich. . . or for more information check CP 8461 on handy form, pages 2 and 3.)

Completely invert unit loads while they're on pallets . . .

fork truck accessory simplifies revolving loads quickly without danger of damage

Uses: Designed for service in inverting of pallet loads necessitated by numerous requirements such as interrupting the natural settling action of some products.

Features: Quickly installed on maker's 3000 or 4000 lb fork trucks. Eliminates removal of unit loads from pallets to invert them.

Description: Attachment consists of a revolving head and a set of top-and-bottom forks, with a plywood backstop and a side retaining board. To invert a load, the operator moves his truck with the attachment positioned so that the plywood retainer is in a vertical position. An empty pallet is carried on the top forks of the attachment. After lifting the load out of storage spot, operator turns the load 180°, using the revolving head. As load revolves, it is kept in position by retaining board until it has completed turn. Then, inverted load shifts to empty pallet and is put back in storage.

(Baker Industrial Truck Div., Baker-Raulang Co., Dept. CP, 1280 W. 50th St., Cleveland, Ohio . . . or for more information check CP 8462 on handy form, pages 2 & 3.)

R·P·C VALVES



NO. 1050
Stainless
Steel
Bar Stock
Valve

R-P&C Bar Stock Valves are an achievement of the valve makers' craft. They are precision turned . . . from carefully tested metals . . . and suitable for a wide range of pressures and temperatures . . . for meter, gauge, test, and general purposes.

• Rugged construction of R-P&C Bar Stock Valves means long, low-cost, trouble-free service. No better bar stock valves are made. See your R-P&C distributor today or write the nearest R-P&C district office for information.

ACCO

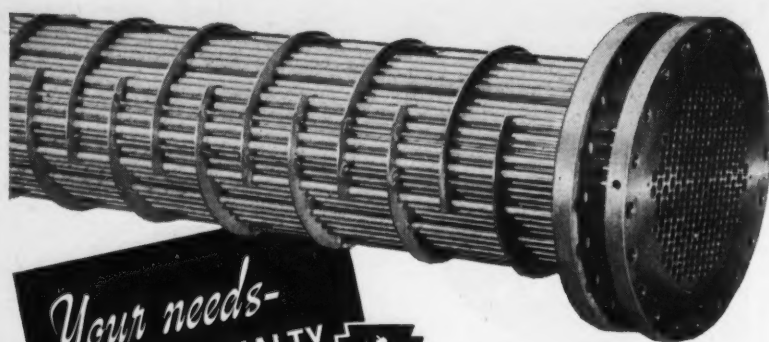
Reading, Pa., Atlanta, Baltimore, Boston, Chicago, Denver, Detroit, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.



R-P & C VALVE DIVISION
AMERICAN CHAIN & CABLE

"Intentionally Better"
**READING-
PRATT & CADY
VALVES**

When inquiring check CP 8463 on handy form, pgs. 2-3



*Your needs—
OUR SPECIALTY*

This condenser is 16" DIA. x 12' tube length; Bundle 3/4" O.D. type 316 Stainless tubes; Double tube sheet also of type 316 . . . manufactured by the Heat Transfer Division of DOWNINGTOWN IRON WORKS, INC. DOWNINGTOWN solicits your inquiry for heavy duty shell and tube equipment fabricated of Aluminum, Inconel, Nickel, Phosphor Bronze, Copper, Silicon Bronze and various grades of Carbon Steel. Some of these are welded by the inert — Gas — Metal — Arc method. DOWNINGTOWN is experienced in building equipment with Bi-metallic, Finned Tube and Impregnated Graphite. Design and construction meet requirements of A.S.M.E. Code or other agency specified by customer. Equipment of our design is sold on a guaranteed performance basis or we will fabricate to customer's drawings. Modern facilities available for radiographing where required. Remember: "Your Needs are Our Specialty!" Write on your letterhead for DOWNINGTOWN literature on shell and tube heat exchangers.

DOWNINGTOWN IRON WORKS, INC.
DOWNINGTOWN, PA.
STEEL & ALLOY PLATE FABRICATION
HEAT EXCHANGERS

NEW YORK OFFICE, 30 CHURCH STREET

When inquiring check CP 8464 on handy form, pgs. 2-3

*Which model of this Extreme
Low Temperature Utility Cabinet
Fits Your Operation Best?*

Available NOW for reasonable delivery, this standard HUDSON BAY® Horizontal Utility Cabinet is industry-proven on such low temperature operations as testing of materials and equipment, metallurgy, shrink fitting, gauge seasoning, rivet cooling, cloud and pour determinations, storage of metals and freezing, production and storage of pharmaceuticals, biologicals and blood plasma.

You may order these dependable units in 3, 6 or 9 cu. ft. sizes with temperature ranges from room to minus 40°F. minus 60°F or minus 90°F.

Most models are air-cooled and require only simple electrical connection. Temperature is adjusted by means of a flush-mounted thermostat. The counter-balanced fingertip control door offers convenient access to the cold chamber.



Write today for complete specifications and recommendations.

REFRIGERATION SYSTEMS, INC.
646C W. WASHINGTON BLVD., CHICAGO 6

"Pioneer Temperature
Control Engineers"

When inquiring check CP 8465 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Pushbutton switch
alternately works
two circuits . . .**

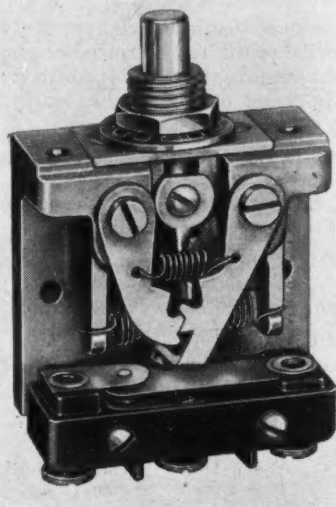
medium current capacity allows direct use in many applications

Uses: Recommended for use as limit switch, for safety circuits, and in circuit transfer of timers, recorders and similar equipment.

Features: Rated at 20 amp, 125 v AC (non-inductive), switch will take moderately heavy loads without contactors or relays.

Description: Type "A-C-O" switch is SPDT. Pressing the spring-back button makes one circuit and breaks the other.

Switch mounts from single hole with



Button gives fast action

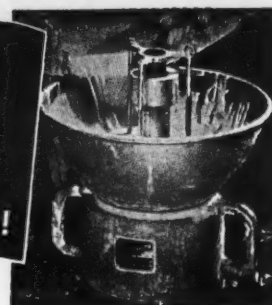
1/2" threaded bushing. Clearance holes for bolt mounting are provided where switch is not to be used in a panel. Screw terminals are plastic-barrier separated and switch mechanism is covered in operation. Cover is not shown in illustration.

(Made by General Control Company, Dept. CP, Boston 34, Mass. . . . or for more information check CP 8466 on handy form, pages 2 and 3.)

Full information on pyrometer parts

Two-color, 40-page publication lists and shows literally hundreds of parts, wells, thermocouples and other items needed in pyrometry. Buyers' Guide 100-4 is issued by Minneapolis Honeywell Regulator Company, Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8467 on handy form, pages 2 and 3.

**A MAGNETIC
SEPARATOR
with PROVEN
PERFORMANCE!**



the FRANTZ FERR O FILTER

Proven through demonstrated effectiveness in some of the best known plants in the country by separating any form of foreign substance subject to magnetic attraction.

The FerroFilter in any one of three types: gravity, underfeed or pipeline, cleans up the liquid—prevents product rejections or lowering of grade.

Catches iron particles sometimes as fine as one micron.

Available also in dry type with vibrator for granular materials and powders.

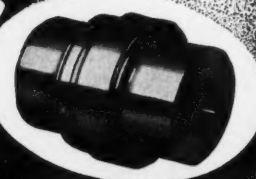
For further information, write for Bulletin No. 46.

S. G. FRANTZ CO., INC.

P.O. Box 1138 Trenton 6, New Jersey

When inquiring check CP 8468 on handy form, pgs. 2-3

*...this STAR gives
OUTSTANDING
PERFORMANCES
LOVEJOY
FLEXIBLE COUPLINGS*



Lovejoy Flexible Couplings do a better job of correcting for misalignment and counteracting vibration, shock, backlash and surge. Free-floating load cushions are suspended between heavy metal jaws . . . last two to five years before changing. No lubrication ever needed on Lovejoy Flexible Couplings.

Write for complete Lovejoy Catalog and Quick-Finding Selector Charts.

LOVEJOY FLEXIBLE COUPLING CO.

5072 W. Lake Street

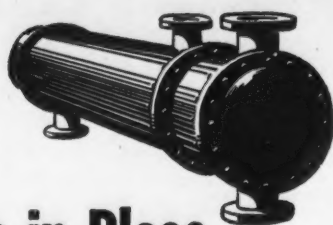
Also Mfrs. of Lovejoy Universal Joints and Lovejoy Variable Speed Transmissions.

When inquiring check CP 8469 on handy form, pgs. 2-3

Chicago 44, Illinois

CHEMICAL PROCESSING

Descale Your Heat Exchangers in Place



NO more dismantling and reassembling clogged heat exchangers! Now clean them in-place. Simply circulate through system specially designed Oakite scale-dissolving, sludge-removing materials. Method much faster, far safer than manual rodding, drilling, lancing.

FREE "54" Digest tells all about this—other time- and money-saving Oakite cleaning shortcuts. Write Oakite Products, Inc., 42 Thames St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
TRADE MARK REG. U.S. PAT. OFF.
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 8470 on handy form, pgs. 2-3



LIQUID TO POWDER IN A SPLIT SECOND!



FOR

**CHEMICALS
FOOD PRODUCTS
SOAP POWDERS
CLAYS & CLAY SLIPS
PLASTICS
BY-PRODUCTS
WASTES**

Write us about your drying problem. Arrange with us for test runs on your material at our Poughkeepsie plant.

INSTANT DRYING CORPORATION
101 Park Avenue, New York 17, N.Y.
Engineering by CLARK, MacMULLEN & RILEY, INC., N.Y.

**LOW COST
PRODUCTION
DRYING**

Instant Drying System Units are operating commercially on the drying of these materials. A large manufacturer of wall tile says their Instant Drying equipment "has produced . . . greater quantity . . . better quality . . . an economy of labor and an ultimate over-all cost reduction for the finished product."

PROCESSING EQUIPMENT

**Single pocket-size device
replaces conventional
drafting tools . . .**

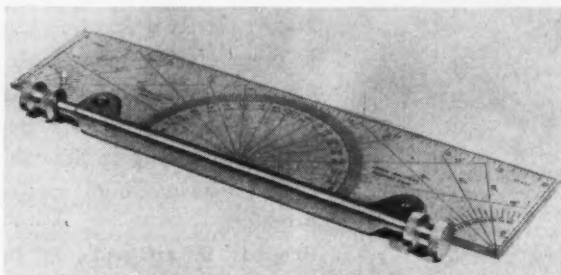
improved model is said to speed work, especially angular line layouts and cross-hatching

Uses: Aids in drafting.

Features: Pocket-size instrument is different from all previous models. Metal parts are now incorporated in one sturdy section, thus eliminating slippage so common in previous models.

According to manufacturer, performance and speed are greater than conventional drafting equipment, particularly for angular layouts and cross-hatching.

Description: In one instrument, the Paraline provides T-square, straight-edge, triangle, protractor, 1/32nd inch



Pocket-size drafting tool

scale, and parallel rules. It measures 10 1/4 x 3-3/16" and requires no attachments or board clamps.

(Introduced by Loomis Industries, Dept. CP, Box 442, Berkeley 1, Calif. . . . or for more information check CP 8472 on handy form, pages 2 and 3.)

**New steel-grinding method
prevents cracking and
'skin' softening . . .**

coolant completely saturates wheel; cutting temps are often 600° less than with ordinary coolant systems

The heat generated during grinding of tool steel alloys very often causes cracking and/or "skin" softening. The ordinary way of cooling is to pump a coolant solution onto the work piece while it is being ground. This method carries away some of the heat, but in most cases there is no coolant at the point where it is needed—under the grinding wheel—because the air blast created by the wheel keeps the coolant away from this area.

This difficulty appears to be circumvented by a new "Cool Grinding" system in which coolant is forced directly through the wheel, from inside out, making sure that each cutting particle in the wheel is provided with lubricant.

Coolant feeds through drip controls having visual flow gauges, and drips into a circular retaining groove around the center of the wheel. Centrifugal force atomizes the coolant and flushes the wheel to prevent loading and glazing. The entire wheel actually becomes saturated with the coolant, and remains so.

Optical pyrometer checks reveal that actual cutting temperature may be as much as 600° less than when ordinary coolant systems are employed. Work is 100% visible.

Special wheels are not needed; all ordinary vitreous-bonded wheels are sufficiently porous to permit coolant flow.

(Development of The DoAll Company, Dept. CP, Des Plaines, Illinois.)

Extra fast, easy pipe cutting with **RIGID**



Smooth clean
pipe cuts with this
RIGID
Cutter

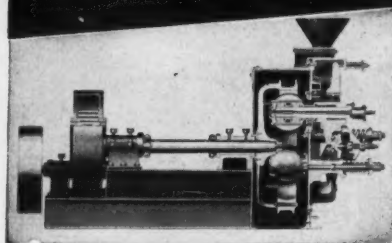
● It rolls right through any pipe with least effort, quick almost burrless cuts—factory tested, tracks perfectly. Special thin-blade cutter wheel for extra fast cutting—or heavy-duty wheel for extra long service. Guaranteed warp-proof special malleable housing. Five models to 6" pipe; 4-wheel short-handle models for speedy cutting in tight places. For tops in clean, easy pipe cutting, buy **RIGID** Cutters at your Supply House.

RIGID
★ **Work-Saver Pipe Tools** ★
THE RIGID TOOL CO. • SYRIA, OHIO

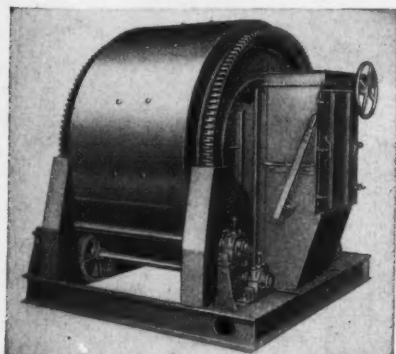
When inquiring check CP 8473 on handy form, pgs. 2-3

When inquiring check CP 8471 on handy form, pgs. 2-3

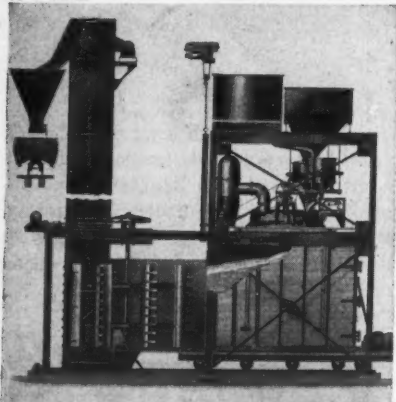
Step-up Production Lower Preparation Costs with STURTEVANT EQUIPMENT



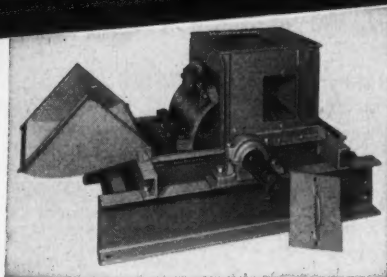
RING ROLL MILL — for medium and fine reduction of hard or soft materials (10 to 200 mesh). Open-door accessibility for easy cleaning. Available in many sizes and capacities.



DRY BATCH MIXERS — 4-way mixing action mixes two or more ingredients into an inseparable, homogeneous mass. Open door accessibility makes cleaning easy. Capacities $\frac{1}{4}$ ton to 2 tons.



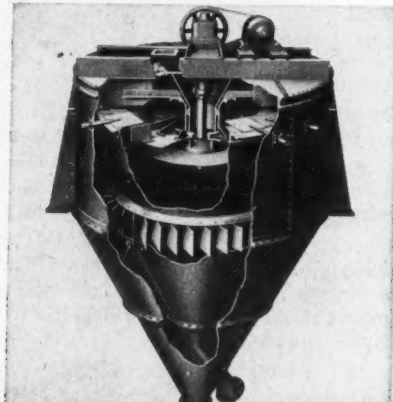
DEN AND EXCAVATOR — speeds processing of superphosphates. Easily operated by two men . . . produces 16 to 40 tons per batch and up to 480 tons per day of superior fertilizer free from lumps.



TAILINGS ROTARY PULVERIZER — increases output of fertilizer tailings . . . will not clog . . . leaves no daily accumulation of unground pellets. Capacities up to 25 tons per hour.



MOTO-VIBRO SCREENS — screen everything screenable. Open and closed models with or without feeders. Many types and sizes . . . screens from $\frac{1}{2}$ " to 60 mesh.



AIR SEPARATOR — for finest separation of materials. Capacities from $\frac{1}{4}$ ton to 50 tons per hour in fineness of 40 to 325 mesh and finer. Increases production of fines, cuts power consumption costs.

Sturtevant Processing Equipment . . . Grinders, mixers, separators, screens, etc. . . . can help you *reduce* today's high manufacturing costs by increasing both machine and operator output, lowering production costs, assuring high quality products.

Records in all types of industries — chemical, plastics, ceramics, cement, food, construction — prove that this equipment works dependably day in, day out with little, if any, maintenance.

Used individually or linked together in proper sequence, they do the job faster and easier than other types . . . handle a larger variety of work.

It will pay you to investigate Sturtevant Processing Equipment for your plant. There is a size and type of machine that will meet your requirements. Write for information.

STURTEVANT MILL COMPANY

119 CLAYTON STREET
BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of:
CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS
and EXCAVATORS • ELEVATORS
MIXERS

Convention & Exhibit Schedule

1952

- Jan. 14-17. Plant Maintenance Show, Convention Hall, Philadelphia, Pa.
- Jan. 16-18. The Society of Plastics Engineers, Inc., 8th Annual National Technical Conference, Edgewater Beach Hotel, Chicago, Ill.
- Jan. 22-23. Association of American Soap & Glycerine Producers, Inc., Annual Convention, Hotel Waldorf-Astoria, New York, N. Y.
- March 10-14. National Association of Corrosion Engineers, 1952 Annual Conference and Exhibition, Galvez Hotel, Galveston, Tex.
- March 11-14. The Society of the Plastics Industry, Inc., Fifth National Plastics Exposition, Convention Hall, Philadelphia, Pa.
- March 16-19. American Institute of Chemical Engineers, Regional Meeting, Biltmore Hotel, Atlanta, Ga.
- April 7-9. The American Society of Lubrication Engineers, Seventh Annual Meeting and Lubrication Show, Hotel Statler, Cleveland, Ohio.
- April 9-11. The Society of the Plastics Industry, Inc., Seventh Annual Technical Session, SPI Reinforced Plastics Division, Edgewater Beach Hotel, Chicago, Ill.
- May 11-14. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.
- Sept. 4-6. American Institute of Chemical Engineers, Regional Meeting, Palmer House, Chicago, Ill.
- Sept. 8-12. Instrument Society of America, National Instrument Conference and Exhibit, Cleveland, Ohio.
- Dec. 7-10. American Institute of Chemical Engineers, Annual Meeting, Cleveland Hotel (headquarters) and Carter Hotel, Cleveland, Ohio.

Survey of possible industrial uses of radioactive fission products

Conducted for the U.S. Atomic Energy Commission but not necessarily representing its opinion or policy is this 102-page report on the technological and economic questions concerned in the industrial use of fission products. One of the conclusions reached is that a potential large-scale industrial demand for fission products exists, but the exact magnitude is unknown since demand will be a function of price.

It is pointed out that millions of curies of radioactivity are contained in the process wastes left over from the production of plutonium in the AEC's nuclear reactors.

Of no usefulness for industrial or explosive power or as a heat source, these fission products are known to be a potential source of large quantities of low-cost radiation.

Among possible future uses for fission products are industrial radiography, cold sterilization of drugs and foods and portable low-level power sources. In the highly speculative area where basic technical information is lacking, possibilities exist for uses in radiation chemistry and flame propagation. To obtain "Industrial Uses of Radioactive Fission Products", remit \$1.50 direct to Project 361, Stanford Research Institute, Dept. CP, Stanford, Calif. When inquiring specify CP 8475 on handy form, pages 2 and 3.

When inquiring check CP 8474 on handy form, pgs. 2-3

PROCESSES, EQUIPMENT and MATERIALS



Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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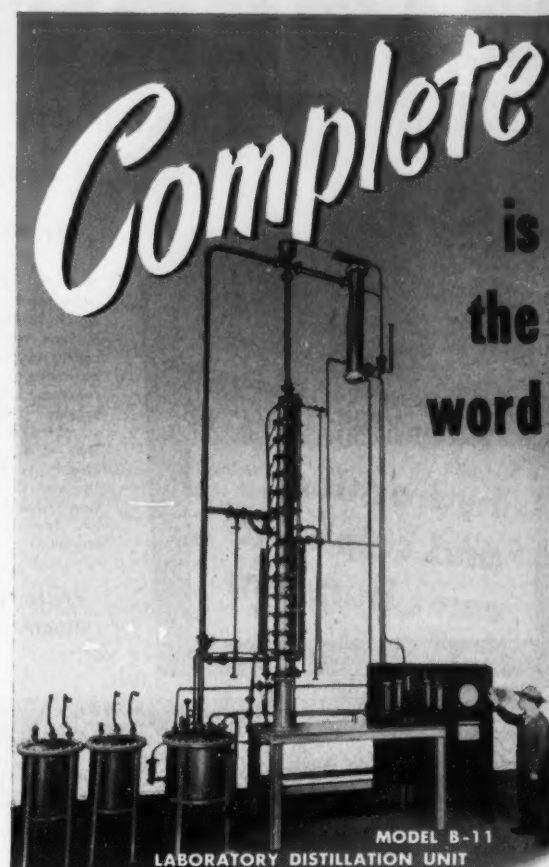
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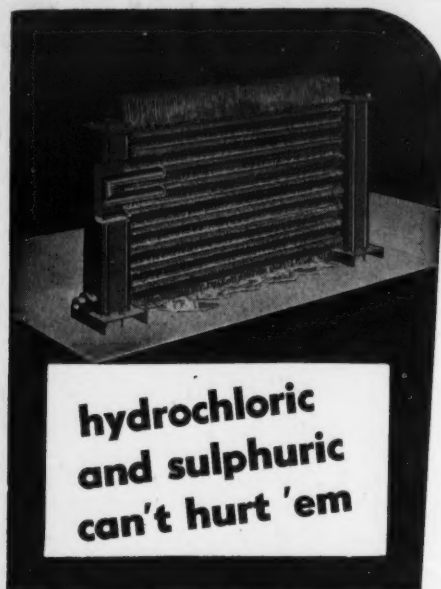
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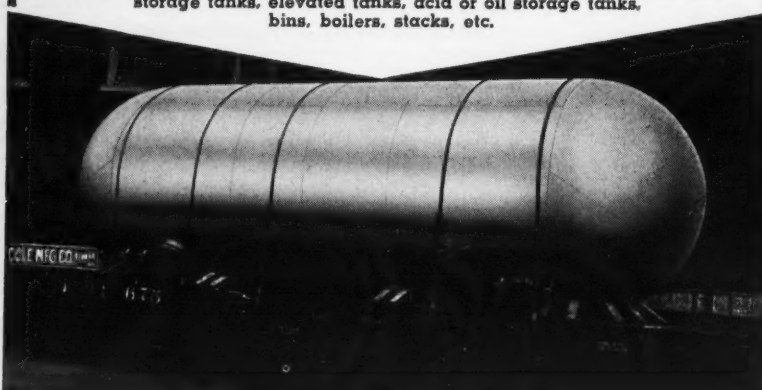
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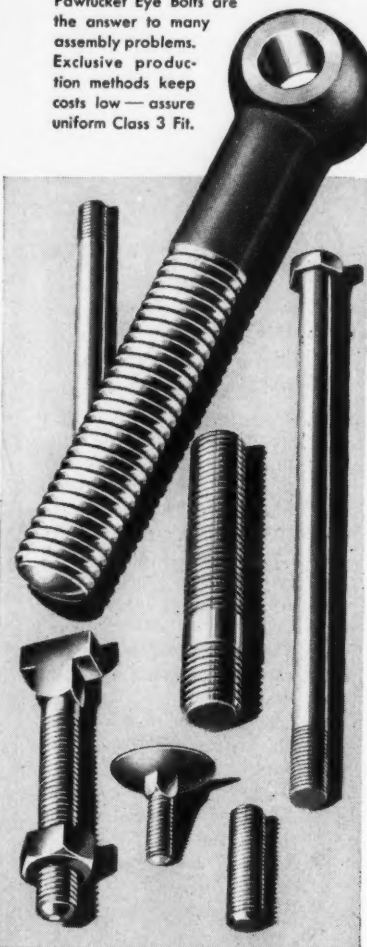
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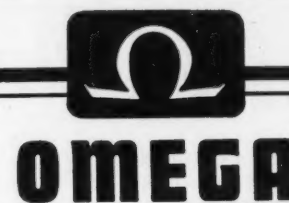
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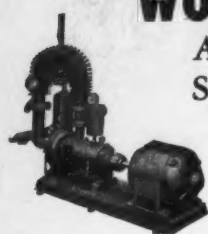


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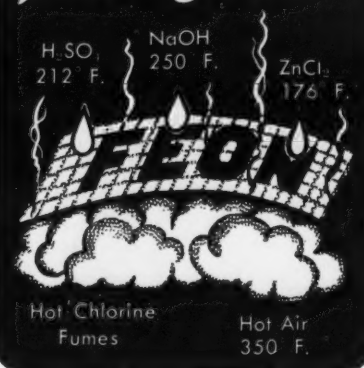
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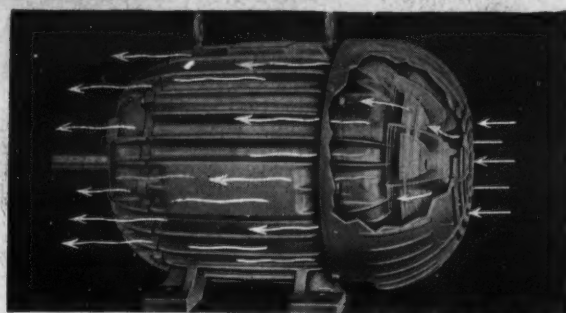
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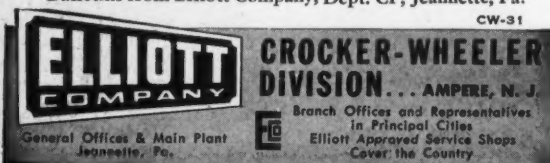


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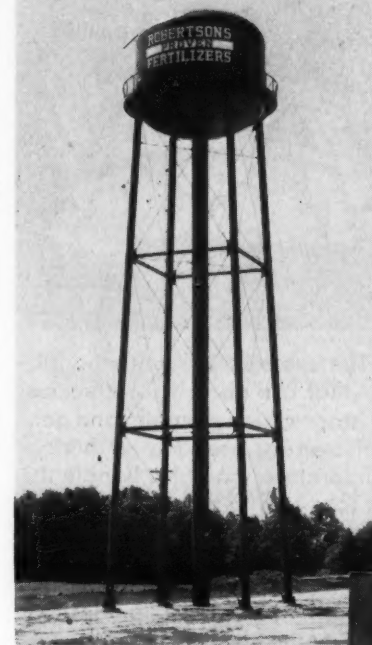
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THE 60,000-gal. Horton elevated tank shown above provides gravity water pressure for fire protection at the Robertson Chemical Company's plant at Statesville, N.C. It stores a reserve of water above the plant, ready to flow, without repumping, as soon as a hydrant is opened.

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"That's Interesting"

Centrifugal ammonia compressor for process refrigeration

Monsanto Chemical company plant, Nitro, W. Va., has the first large centrifugal ammonia compressor ever installed in this country for process refrigeration. The five stage centrifugal compressor, driven by a 600 hp motor, doubles the capacity of an existing reciprocating ammonia system. The new unit serves as the low stage compressor in the refrigeration plant. It takes ammonia gas at 25 lb suction pressure and discharges it to the high stage at 75 lb.

Compressor is of all-ferrous construction for use with ammonia and is similar to those used for some years for air and gas compression in process industries. Capacity of the expanded system is now 800 tons. Compressor was built by Carrier Corp., Syracuse, N. Y.

Railroad and trucks can't carry 'em if they make them any bigger

Ever larger conveyor belts to make higher lifts and longer single flights are in demand to handle heavier loads and harder impacts. B. F. Goodrich plants are now producing conveyor belting in single rolls weighing up to 35 tons, or as large as existing rail and truck facilities can handle.

Aiding production of such belting is a 664,000 lb press for vulcanizing belts and a long belt building table especially designed and equipped with the latest tension control devices. (B. F. Goodrich Co., Akron, Ohio.)

Reduction of tire hum

Those motorists who object to the occasional rumble or hum of tires should consider that these sounds are in the interests of safety. Perfectly noiseless tires could be built but only at a sacrifice of good anti-skid characteristics.

The industry's problem is to find out at what point tire noise becomes a nuisance and distraction to most drivers.

Sound patterns and intensities can be obtained with noise analysis equipment. However, the point at which sound becomes annoying and the frequency which produces this sound are hard to find and evaluate. It is still necessary to get out and get under to try to get the real answer.

Tire hum has been reduced by employing smaller design pattern elements, varying the length of design elements around the tire to set up wave interference patterns and by designing tire so that resulting pitch will be above audible range. Also design elements may be sized so that tone produced is similar to a wind whistle that will not be annoying. (The B. F. Goodrich Company, Akron, Ohio.)

Largest pipe line pumps and motors

The largest electric motors and pumps ever built for oil pipe line pumping service are now being installed by the Texas Pipe Line Company, Houston, Texas, on what is known as the Basin Pipe Line System. Eight 3,000 hp, 1780 rpm induction motors will drive huge centrifugal pumps in four stations of the Jal, New Mexico to Cushing, Okla. section of the line. Seven similar motors will add 100,000 barrels per day to pumping capacity of section delivering crude oil from West Texas and Eastern New Mexico to connecting lines at Cushing for movement to Chicago-Great Lakes area.

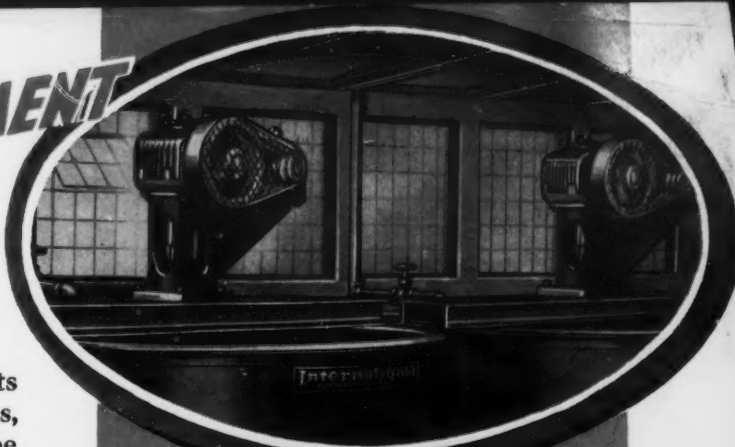
Despite their great horsepower, motors will be started cross-the-line at full voltage. They are designed for especially low starting current to minimize disturbance to power systems. (Electric Machinery Manufacturing Co., Minneapolis 13, Minn.)

Self-watering flower pot

A self-watering flower pot molded of Bakelite styrene plastic holds approximately a week's supply of water. The pot has a perforated base and a fiber wick. Pot rests in a reservoir. Wick, by capillary action feeds water to the roots of the plant. Made by Quality Molding Products, Chicago 9, Ill. (As reported in Bakelite Review)

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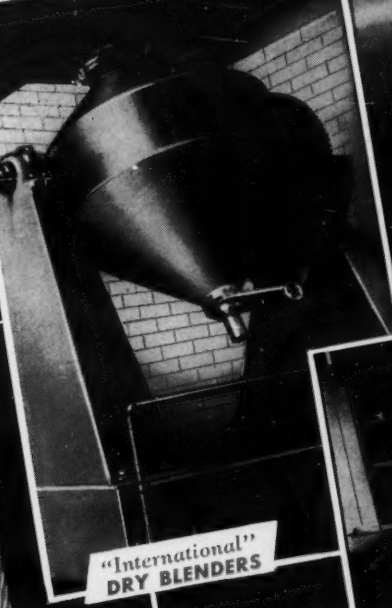
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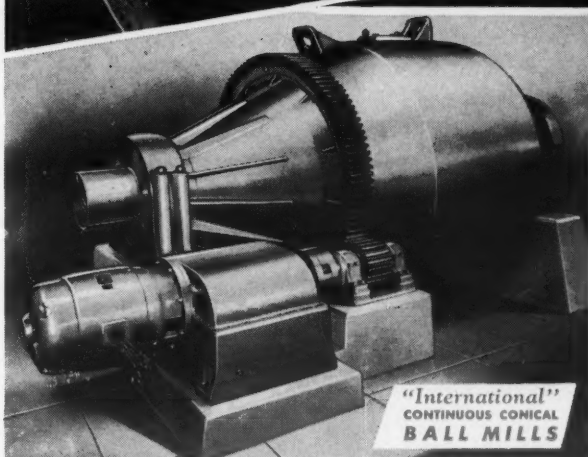
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